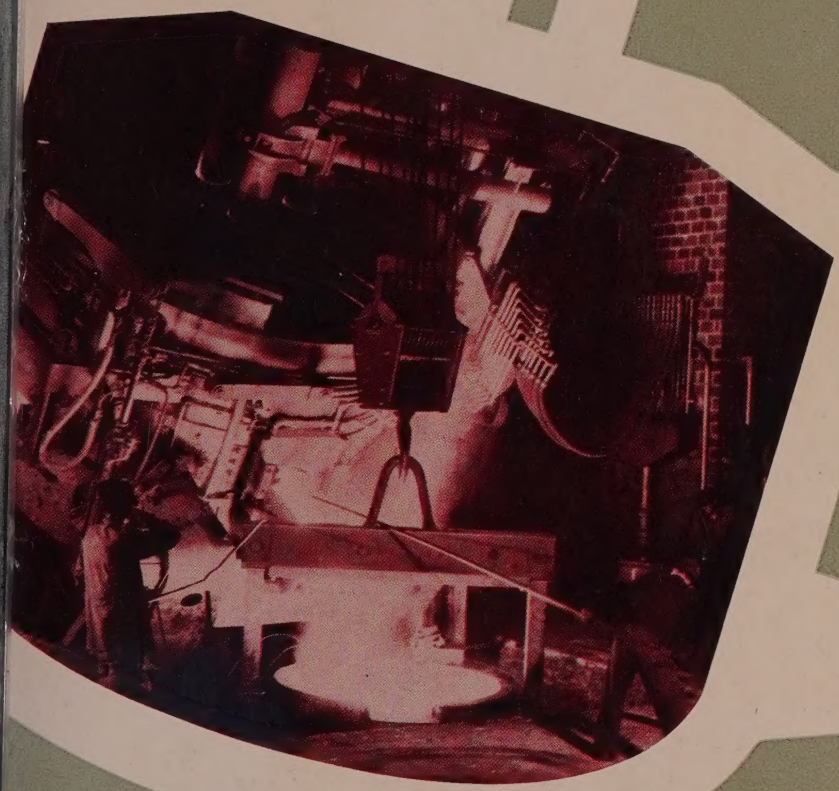
GUST 24, 1953

STEEL

THE WEEKLY MAGAZINE OF METALWORKING



LIBRARY

Electric Furnaces Tapping Open-Hearth Market

Higher proportion of carbon to alloy steel raises question of costs and extras — p. 84

FIRST SIX MONTHS OF 1953
4.2
MILLION TONS

50%
IS
CARBON STEEL

✓ DEFENSE EQUIPMENT DISPOSAL
It Worries Tool Builders, p. 39

✓ SKY-HIGH CONSTRUCTION IN '53
$34.7 Billion Volume Likely, p. 43

CONTENTS — PAGE 5

Take a closer look at the

MACHINABILITY

of B&W mechanical tubing *You'll like it*

You'll find the machining characteristics of B&W Mechanical Tubing make it adaptable for turning out hollow cylindrical parts with any type of machine tool on mass production or jobbing basis. You can get this versatile tubing in grades, tempers, finishes and sizes to suit any combination of production conditions and product specifications. And no matter what analyses you need—carbon, alloy or stainless steels—to get the desired physical properties in your finished machined parts, B&W can supply them.

You'll find Mr. Tubes—your nearby B&W Tube Representative—a good man to consult when you need help in determining the best available mechanical tubing for your specific requirements.

B&W SEAMLESS and WELDED TUBES

THE BABCOCK & WILCOX COMPANY

TUBULAR PRODUCTS DIVISION

Beaver Falls, Pa.— Seamless Tubing; Welded Stainless Steel Tubing
Alliance, Ohio—Welded Carbon Steel Tubing

TA-1751

Tool Steel Topics

BETHLEHEM STEEL COMPANY, BETHLEHEM, PA.

the Pacific Coast Bethlehem products are sold by Bethlehem Pacific Coast Steel Corporation. *Export Distributor:* Bethlehem Steel Export Corporation

Three types of tool steel solve most hot-work problems

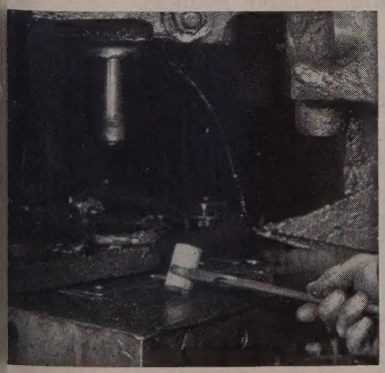
Hot-work tool steels which contain large amounts of either tungsten or molybdenum have high "red-hardness." In other words, they withstand very high operating temperatures without softening.

Although these steels have excellent wear-resistance, they cannot be subjected to drastic water-cooling while in operation because this results in excessive "heat-checking." Caused by repeated thermal stress, this condition shortens their service life. The 8½-pct-molybdenum type (our Hot-Work 8) is better in this respect than the 9-pct-tungsten type (our 57 Hot-Work).

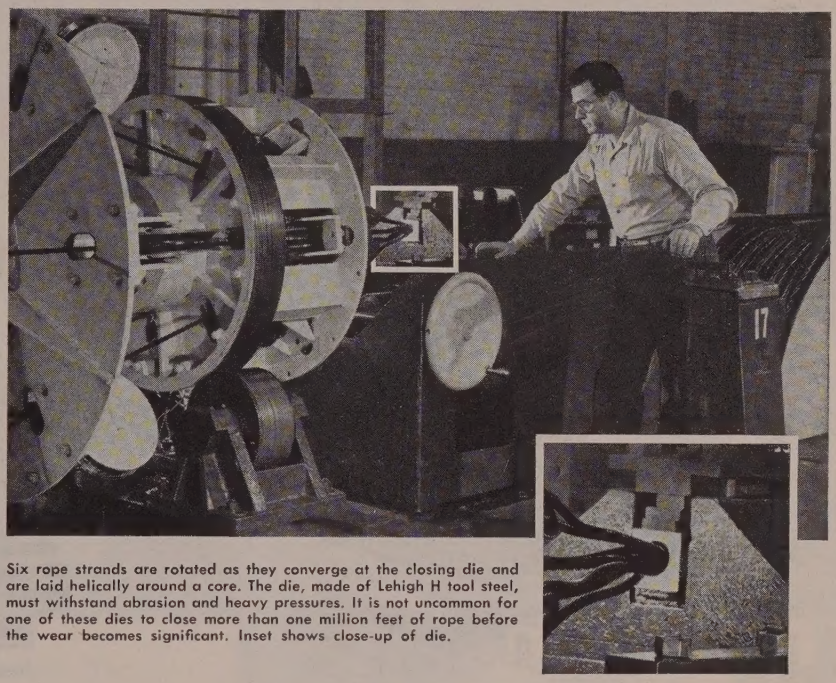
One way to prevent excessive temperature build-up, in repetitive operations where water-cooling is not used, is to provide duplicate tools which can be used alternately in the operation. This arrangement makes possible a longer cooling time between operations than if only one tool is used.

Whenever the nature of the hot-work operation is such that water-cooling of the tool is practical, it is often best to use one of the 5-pct-chromium types of hot-work steel—such as our chrome-moly-tungsten (Cr-Mo-W) and chrome-moly-vanadium (Cr-Mo-V) grades. The cooling prevents loss of hardness due to high temperature.

Although they have lower red-hardness, the 5-pct-chromium grades are good choices for tools and dies which involve both shock and hot-metal contact.



Operated in a 400-ton press, this punch is made of Bethlehem Cr-Mo-W tool steel. It extrudes steel slugs heated to 1950 F in the making of rock bits.



Six rope strands are rotated as they converge at the closing die and are laid helically around a core. The die, made of Lehigh H tool steel, must withstand abrasion and heavy pressures. It is not uncommon for one of these dies to close more than one million feet of rope before the wear becomes significant. Inset shows close-up of die.

Wire rope "closed" by long-wearing dies of LEHIGH H tool steel

One of the vital steps in the making of wire rope is the "closing" operation which arranges the rope strands compactly in a helical position around a core of either hemp or steel wire.

Closing dies are subject to considerable abrasion by the rotating strands as they converge at the die and pass through, at the same time being laid into accurate position. Lehigh H is ideal for this application because its high-carbon, high-chromium composition gives it extreme long-wearing properties. When the dies eventually become worn, they are usually refinished for use in closing rope of a larger diameter.

Made in two pieces, closing dies are machined to accurate size, heat-treated to a hardness of about Rockwell C-61; then they are ground and polished to avoid damage to the wearing surfaces.

Because of its air-hardening characteristics, Lehigh H is subject to only the minimum amount of distortion during heat-treatment—an important feature wherever accuracy is essential.

BETHLEHEM TOOL STEEL ENGINEER SAYS:

Avoid sharp-cornered keyways

Keyways with sharp corners are the cause of many shaft failures. Fundamentally, this type of breakage is a fatigue-failure due to excessive stress-concentration at the sharp corners.

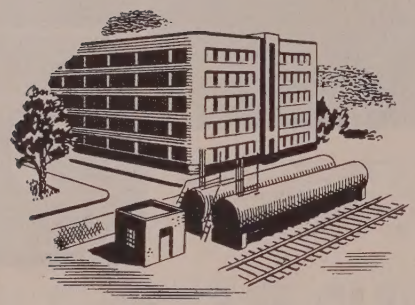
The cure for failures of this kind is to make keyways of half-round design and use a round key in the assembly.

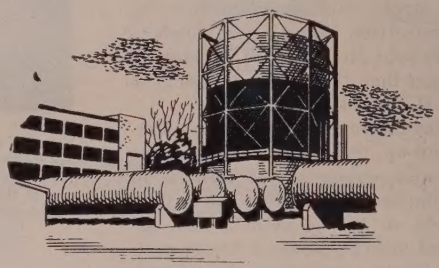
Of course, the fact that stresses are low often prevents the failure of shafts with square keyways; and so this design continues to be used. But that does not alter the fact that a square keyway on a shaft is a basic design fault.

America's Largest Selling Brand of LP-Gas

PHILGAS*!

CLEAN, UNIFORM HEAT FOR INDUSTRIES AND UTILITIES





PHILGAS BENEFITS: This top-quality Phillips *66* butane-propane fuel is uniform in thermal value and gravity. Free from harmful contaminants, it burns *clean!* Automatic operation cuts down on overhead, assures constant furnace temperatures, atmospheres and pressures.

PHILGAS USES: Leading industries use Philgas successfully for heat treating, mold drying, core baking, ceramic firing and many other operations. Many progressive utilities also find it advantageous to augment their natural or manufactured gas output with clean-burning, reliable Philgas.

*Philgas is the Phillips Petroleum Company trademark for its high quality propane-butane LP-Gas or bottled gas.

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of an arc welding ELECTRODE can affect the

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EVERY STEP in the Production of HOBART ELECODES . . . chemical, metallurgical, and mechanical—is based he objective of having ALL CONDITIONS in the welding just what they *should* be. Therefore, when you use HORT ELECTRODES, you are sure of:

SPEEDIER WELD PRODUCTION • DEPENDABLE WELDED JOINTS • IORE PRODUCTION PER OPERATOR PER HOUR • LESS WASTE DUE O SPLATTER • LESS CHIPPING AND GRINDING AFTER WELDING • OWER WELDING COST—PER POUND—PER FOOT—PER HOUR.

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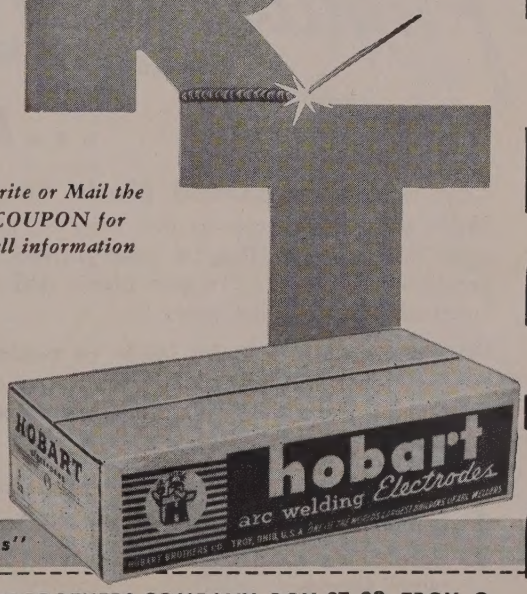
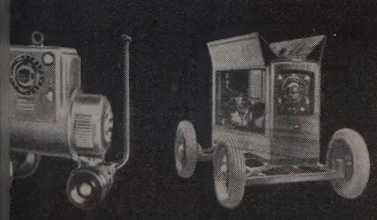


"One of the world's largest builders of arc welders"



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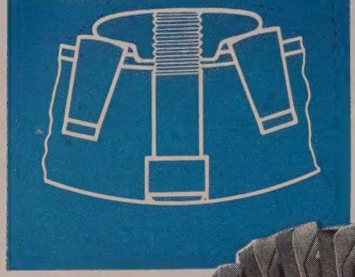

Continental Inside Cone Face Mill with illustration showing how blades are locked in the rugged body.

Continent Outsid Cone Fa Mill wi illustrati showin how blad are locke

Production Proved

...AND REALLY RUGGED

Continental Inserted Blade Face Mills offer the assurance that they're "just right" for your job. They've been proved in production in Ex-Cell-O's own plants and in hundreds of plants like yours.

Whether the job calls for inside or outside blades, you'll find that eight advantages of Continental Face Mills will bring lower tool costs on tough jobs:

1. *accurately machined* tapered blade slots.
2. *hardened bodies* to prevent slot mutilation.
3. *close blade spacing,* heavy sections between blades.
4. *positive-lock* blades.
5. *simplicity:* no screw threads in body; no loose wedges or pins.
6. *easy adjustment:* no special tools needed.
7. *longer blades* give more pieces and more grinds per blade.
8. *practically-indestructible* bodies.

Blades can be furnished in any material specified and cutters can be furnished with any specified drive or with combination drives for American Standard and Ingersoll machines.

Order through your Ex-Cell-O representative or from catalog. Write on your letterhead for Catalog 60681 if you don't have one.

Continental TOOL WORKS

DIVISION OF EX-CELL-O CORPORATION

DETROIT 32, MICHIGAN

32-33

This Week in Metalworking

STEEL

Vol. 133 No. 8 August 24, 1953

✓NEWS ✓PRODUCTION-ENGINEERING ✓MARKETS

✓ **Metalworking Outlook** 31
New aspects of business, profits, labor and other subjects are analyzed for your guidance by the editors

As the Editor Views the News 35

Windows of Washington 46
Reflections from the nation's capital report impacts of government upon industry

Mirrors of Motordom 53

The Business Trend 57

Men of Industry 61

✓ **Technical Outlook** 79

Jet Principle Blasts Annealing Problems 80
Burners work like jet engines to stir up heat convection in coil annealing furnace

Surface Finishing Stainless Steel 82
Here are some good polishing and buffing tips with "how-to-do-it" photographs and writeup

Progress in Steelmaking 84
More Carbon Steel Goes Electric—Open hearth doomed? Not for a while, but the economy seems to favor electrics

New Products and Equipment 91

Induction Furnaces—Stir As They Melt Brass, Bronze 100
Big savings in heat energy are reported since heat is confined to metal in charge. Zinc losses are low

Bulk Handling Can Be Done Cleanly 110
Comfortable place on hot summer day is H-W's cool, clean refractory brick plant at Windham, O.

✓ **The Market Outlook** 115
Metal Prices and Composites begin on Page 116

Nonferrous Metals 118

Behind the Scenes 6
Letters to the Editors 10
Obituaries 64
Helpful Literature 95
Calendar of Meetings 102

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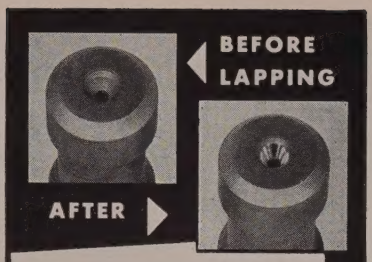
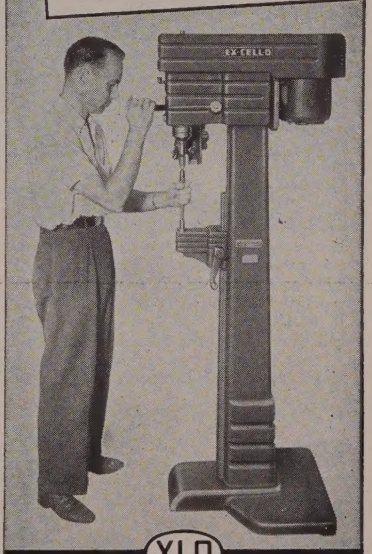


PROBLEM:
To get accurate positioning from female centers.

ANSWER:
LAP THE CENTERS

Ex-Cell-O Center Lapping Machines correct inaccuracies of rough centers, assuring GREATER PRECISION from your present equipment. They are easy to operate. Center Lapping reduces manufacturing costs by minimizing waste from grinding rejection; shortens assembly time because of closer tolerances. All the facts are in Bulletin No. 40271. Write for a copy.



53-28

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EX CELL O for PRECISION

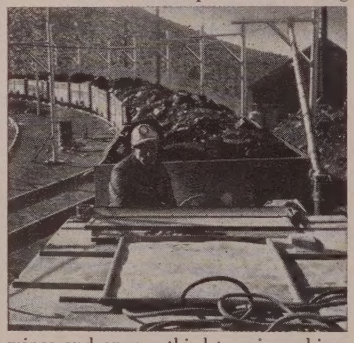
CENTER LAPPING MACHINES
BY
EX-CELL-O CORPORATION
DETROIT 32, MICHIGAN

Advertisement

what's NEW in Engineering

Laboratory facilities for engineering research are available to individuals and groups with worthwhile projects at Richmond Engineering Field Station, administered by Department of Engineering, University of California. Charges are based on actual expenditures with appropriate overhead. For information, write Institute of Engineering Research, University of California, Berkeley.

Rebuilding a near-ghost mine at Sunnyside, Utah, for greater coking-coal production with higher efficiency, is a current major project of Kaiser Engineers. The original Sunnyside mines, opened in 1896, were in bad condition. The problem was to rehabilitate and expand two existing

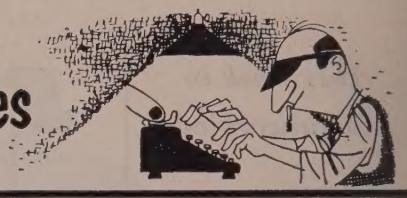


mines and open a third to raise coking-coal production from 1,000,000 to 1,715,000 tons per year. We'll send you a reprint of an article by Wesley Hyatt and R. G. Heers in *Coal Age* which tells the full story of Sunnyside's emergence from a "near-ghost" to one of the most efficient and modern coal producers in the West.

A $50,000 bonus goes to the first person to bring in a Tennessee oil well that will produce 50 barrels a day for six months, according to a new state law. Only 35 wells are now producing in Tennessee, but geologists think the State has rich oil possibilities.

When it comes to research, preliminary engineering studies, engineering design and layout, estimating, preparation of specifications, construction programing, negotiation of contracts, and procurement and expediting of materials and equipment—call or write: Kaiser Engineers Division of Henry J. Kaiser Company, Kaiser Building, Oakland 12, California.

behind the scenes



Steelmaking Goes Electric

May we call your attention to the electric arc furnace pictured on the cover of this issue (photograph courtesy of the Eastern Stainless Steel Corp.).

This furnace, as you will read in the article "Open Hearth Challenged as More Carbon Steel Goes Electric"—page 84 of this issue—may be the harbinger of things to come in steelmaking.

An 80-ton furnace was big stuff a few years ago. Now we hear that they're really making them king size. Two 200-ton top charge Heroult furnaces are being constructed by American Bridge for McLouth Steel Corp. These big fellas will have approximately 4,000 cubic feet volumetric capacity and will be capable of holding 80 to 100 tons of scrap for the initial charge. It is estimated that these furnaces on cold melt will produce in excess of 24 tons of ordinary carbon or rim steel per hour.

We are particularly indebted to Bituminous Coal Research Inc. and the 14 electric utility companies which sponsored Battelle Memorial Institute's study of the comparative economics of open-hearth and electric furnaces for production of low carbon steel. Much of the basic material presented in STEEL's article is taken from that study.

Microfilm Edition Ready

If you've got a little space in some corner of your company library that's 5" x 4" x 4", it's all you'll need to file a complete set of STEEL issues for the year 1952. Microfilm is the answer, of course, and we are happy to announce that the 1952 edition is now ready.

Each of the 10,129 pages published during that year is reproduced in every detail. Each microfilm roll (there are three in the set) contains a detailed editorial index telling you exactly where to find the material you are looking for by subject, title and page number.

If you want this capsule package for your library, write to University Microfilms, 313 N. First Street, Ann Arbor, Mich. The cost for the complete set is $28 and this, they tell us, is much less than the cost to bind 52 issues of STEEL for reference use.

More Daffynitions

Received a new crop of daffynitions in the mail last week and we are hurrying to pass them along to you. . .

POISE—the pose that makes others think you know what you're doing.

SUBTLETY—the art of saying what you think and then getting out of range before it's understood.

AMERICAN—a man who likes to discuss the United States Constitution despite the fact that he has never taken the time to read it.

LECTURE — the capacity of the mind to absorb as much as the seat can endure.

EXPERIENCE—what you have when you're too old to get a job.

EXTRAVAGANCE—the way other people spend their money.

Mangled Mangoes

We had a few quickie returns on the Mango problem of August 10 but we're sorry to say that these were off the beam. We had just about given up hope when Steve Schemine, purchasing agent for Valves & Presses, Delaware, O., sent us the correct answer just as we were wrapping up this week's chit chat. The least number of mangoes that will turn the trick is 79.

Now, Figure This One!

Two pedestrians walk along the same road in the same direction. The first, walking at 4 miles an hour, starts out eight miles in advance of the second, who walks at 6 miles an hour. As they start, the dog of one of them leaves his master and sets off for the other man at 15 miles an hour. As soon as he reaches the second man, the dog returns at once to his master, and so he continues to run back and forth until the second man overtakes the first.

How far does the dog travel?

Shrdlu

(Metalworking Outlook—Page 31)

Ramset bottoms* installed in new open hearths at Youngstown's Indiana Harbor Works

YOUNGSTOWN Sheet and Tube is making steel on Ramset bottoms in its new open hearth shop at the Indiana Harbor Works.

A majority of the bottoms installed in new open hearth shops in the past several years are of rammed construction—and of these hearths, Ramset installations hold a 2 to 1 advantage over any other magnesia ramming mix.

Basic Refractories pioneered the development of rammed hearth methods nearly fifteen years ago. These methods have been continually refined over the intervening years by the practical steelmakers who make up Basic's sales and service staff. A few years ago, Basic supplemented this advanced technique by making available mixing, conveying and compacting equipment specifically designed for the job.

So, in selecting Ramset, a steelmaker avails himself of a proven refractory and the most modern methods and equipment for installing it, as well as of the services of Basic personnel who, by background and training, are skilled in the use of granular basic refractories.

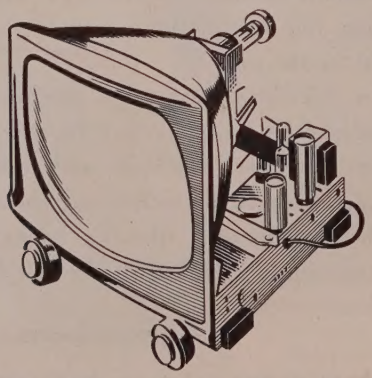
GRANULAR BASIC REFRACTORIES

*Surfaced with grain magnesite

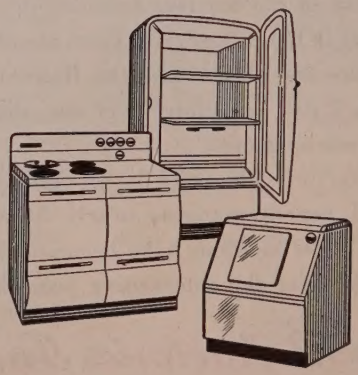
Basic Refractories Incorporated 845 HANNA BUILDING, CLEVELAND 15, OHIO

Exclusive Agents in Canada: REFRACTORIES ENGINEERING AND SUPPLIES, LTD., Hamilton and Montreal

UNBRAKO SELF-LOCKING SOCKET SET SCREWS feature the following advantages: knurled cup point that won't work loose; accurate hex socket for nonslip, positive drive; fully formed threads—Class 3 fit; heat treated alloy steel for strength; standard sizes—# 4 to 1"—in a full range of lengths



USE UNBRAKO SELF-LOCKING SOCKET SET SCREWS wherever ordinary cup point set screws are used... on radios, television sets and electronic equipment.



On refrigerators, washers, other household appliances

9 times out of 10 a standard UNBRAKO will do the job

A special socket screw may not be necessary, a standard UNBRAKO usually does the same job—much cheaper. Your local industrial distributor stocks Standards. He gives immediate attention to your requirements, and such extras as special delivery to your plant. Write for a copy of UNBRAKO Standards. SPS, Jenkintown 33, Pa.

UNBRAKO® SOCKET SCREW DIVISION

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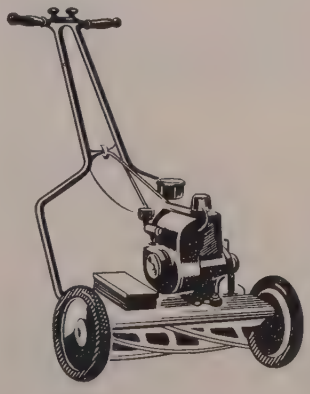
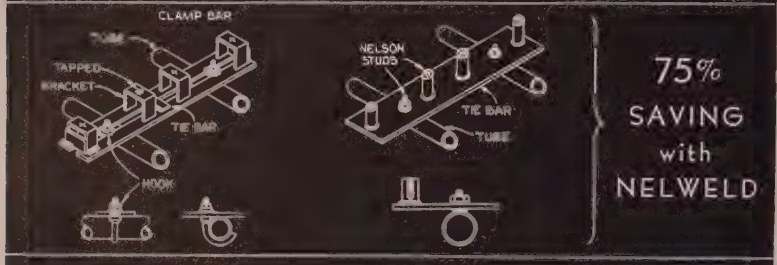


On power mowers, power saws and other power tools.

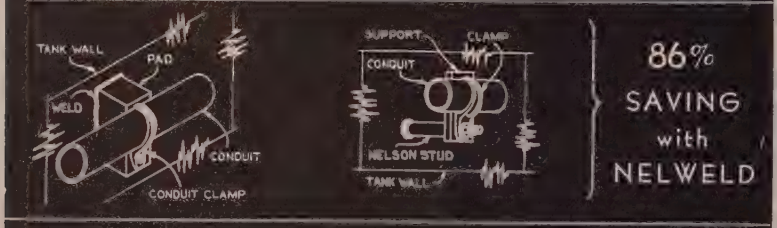
UNBRAKO Standards—as listed in the SPS Catalog—are stocked by leading industrial distributors everywhere.

71% to 86% Savings by redesigning with NELWELD*

FORMER METHOD · NELWELD METHOD · RESULT



75% SAVING with NELWELD



86% SAVING with NELWELD

71% SAVING with NELWELD

These substantial savings in fabrication costs were obtained when an electrical equipment manufacturer took advantage of the NELWELD method of fastening to redesign component parts. If you are now drilling/tapping or hand welding, chances are you too can . . .

Cut fastening costs, gain important corollary benefits—with NELWELD

In addition to slashing direct fastening costs, NELWELD pays off with such important corollary advantages as: reduction in costly material handling . . . saving in steel by eliminating bosses, flanges, brackets . . . a saving in manhours required to assemble . . . increased production.

If you're ready to cut your costs, start by writing for the booklet, "How to Design for NELWELD."

*Trademark

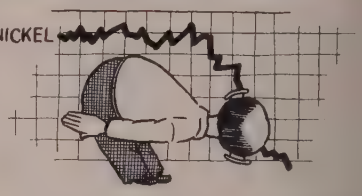
Fasten it Better . . . at Less Cost, with NELWELD T. M. REG.

NELSON STUD WELDING

DIVISION OF GREGORY INDUSTRIES, INC., LORAIN, OHIO

LETTERS TO THE EDITORS

Answers to Nickel Shortage



I am writing to ask your permission to reproduce the illustration "How To Live with the Nickel Shortage" which was part of your article "What To Plate" (July 20, p. 84). I thought the article was very good and would like to make reference to it in our regular issue of the "Stevens Technical News Letter."

Carl B. Anderson
advertising manager
Frederic B. Stevens Inc.
Detroit

• *Permission granted.—ED.*

Help in Forecasting Sales

We would like to receive the pamphlet "Sales Forecasting" put out by National Industrial Conference Board. This pamphlet is mentioned in your article "Forecasting Business Trends" (June 29, p. 47) but no address is given from which to order a copy.

Allan Fredhold
industrial development engineer
Emsco Mfg. Co.
Los Angeles

• *We do not have an extra copy of the pamphlet, but we believe you can get one by writing to: National Industrial Conference Board, 247 Park Ave., New York 17.—ED.*

Canadian Opportunities

I have noted frequent references in my copies of STEEL to the industrial opportunities open in Canada. I have a young man friend who is particularly interested in that country industrially as well as to their methods of conservation of both animals and other natural resources. Where should he address inquiries on these subjects?

L. E. Perkins
Central Steel & Wire Co
Oshkosh, Wis.

• *Write the Dominion Bureau of Statistics, International Trade Division, Department of Trade & Commerce, Government of Canada, Ottawa, Canada. —ED.*

Plastic Dies for Mexico

In your issue of July 27 ("Mirrors of Motordom," p. 49), we have read where you are informing that for lower volume production plastic dies are ideally suited in connection with truck production.

We have been having big troubles about dies in our factory of garden chairs on account of the low consumption we have here in Mexico, and therefore a steel die costs us very much.

If possible please advise us who is producing this plastic material for dies

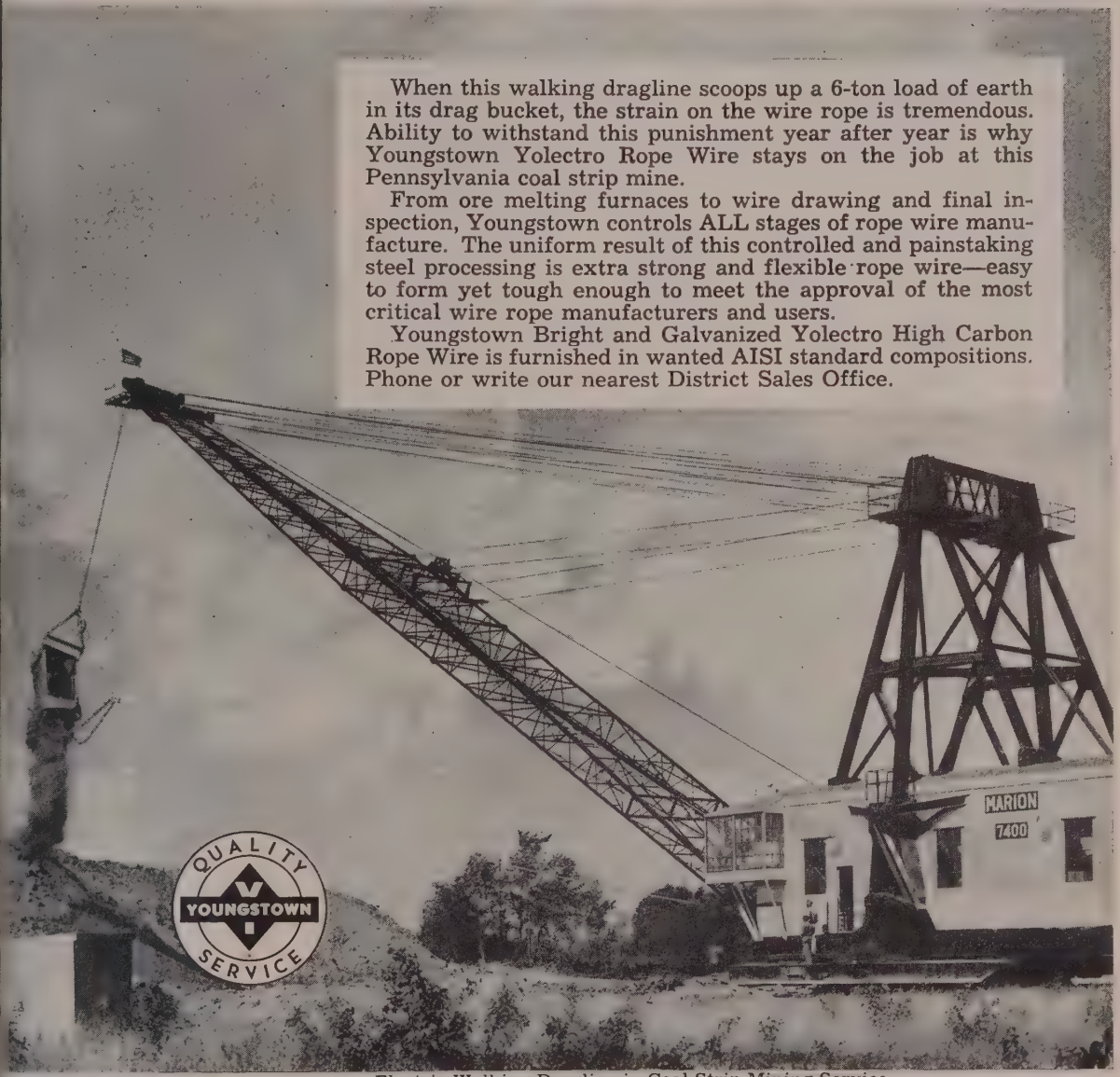
Please turn to page 12

Wire Rope From Youngstown Yolectro Rope Wire Proves Extra Strong in Service

When this walking dragline scoops up a 6-ton load of earth in its drag bucket, the strain on the wire rope is tremendous. Ability to withstand this punishment year after year is why Youngstown Yolectro Rope Wire stays on the job at this Pennsylvania coal strip mine.

From ore melting furnaces to wire drawing and final inspection, Youngstown controls ALL stages of rope wire manufacture. The uniform result of this controlled and painstaking steel processing is extra strong and flexible rope wire—easy to form yet tough enough to meet the approval of the most critical wire rope manufacturers and users.

Youngstown Bright and Galvanized Yolectro High Carbon Rope Wire is furnished in wanted AISI standard compositions. Phone or write our nearest District Sales Office.



Electric Walking Dragline in Coal Strip Mining Service at Buckeye Coal Co., Grove City, Pa.

Youngstown YOLECTRO HIGH CARBON ROPE WIRE

THE YOUNGSTOWN SHEET AND TUBE COMPANY *Manufacturers of Carbon, Alloy and Yoloy Steel*

General Offices: Youngstown, Ohio - Export Office: 500 Fifth Avenue, New York 36, N. Y.

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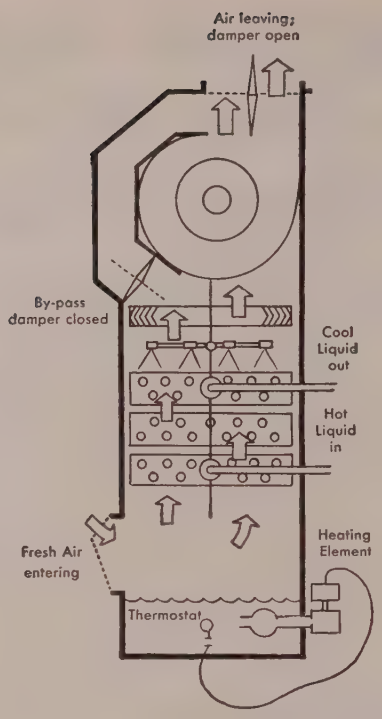
NIAGARA Aero Heat Exchanger



U. S. Reissue Patent Nos. 22,533 and 22,553

1. Extends quenching capacity without extra water or cooling tower.
2. Quickly pulls down heat at initial peak load of Quenching.
3. "Balanced Wet Bulb" Control holds quench bath at proper temperature, heating if needed to start after shut-down, and cools or heats by automatic control.
4. Saves cleaning expense as compared to cooling tower which picks up acids and fumes from air.

APPLICATIONS	USED IN THE MANUFACTURE OF OVER 400 PRODUCTS INCLUDING
Quench Oils	Aluminum, copper, steel, nickel and alloys.
Cutting Oils	Diesel, aircraft, automotive and other engines.
Lubricating Oils	Chemical processes, plastics, adhesives.
Cooling water and brine	Gears, bearings, forgings and castings.
Cooling gas and compressed air	Wire, controls, electronic products.
	Ammunition, explosives, shells, ordnance, firearms.
	Farm machinery, tools, hardware.

For help in increasing production, saving of cooling water, write for Bulletin #120. Address

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Over 35 Years' Service in Industrial Air Engineering

Dept. S, 405 Lexington Ave. New York 17, N. Y.

Experienced District Engineers in all Principal Cities of U.S. and Canada

LETTERS

Concluded from page 10

or who can take care of making plastic dies.

Thanking you in advance for the attention and hoping to receive your notices.

Eugenio Clariond
Muebles Tubulares, S.A.
Monterrey, Mexico

• *For information, write Ren-ite Plastics Inc., Lansing, Mich., Kish Plastics Co., Lansing, Mich., and/or D. G. Products Corp., Clauson, Mich.—ED.*

Open Season on Incentives

Will you please send us 25 copies of your article "Watch Out for Incentive Snares" by M. K. Sheppard (June 15, p. 59).

A. J. Kiessling
factory manager
Huntington Division
Houdaille-Hershey Corp.
Huntington, W. Va

• *Sent.—ED.*

Double Dose of Interest

The articles "Wage Incentives Can Work with Supervisors, Too" (p. 46) and "Cold Extrusion of Steel" (p. 78) appear in the July 27 issue of STEEL. Because of their interest, we would greatly appreciate your permission to reprint them for distribution to our members only. Proper credit would, of course, be given.

Jehu R. Derrickson
executive secretary
Formed Steel Tube Institute
Cleveland

• *Permission granted.—ED.*

"Blessed Event" for Steel

Again congratulations on the excellence of your articles "Birthmarking Plan Wins Defense OK" (July 20, p. 46) and "To Birthmark Alloys" (July 20, p. 39). May we have 10 tearsheets of each?

Elmer F. Smith
Lt. Colonel, USAF
Chief, Materials Branch
Directorate of Industrial Resources
Office, Deputy Chief of Staff, Materiel
Department of the Air Force
Washington 25

• *Sent.—ED.*

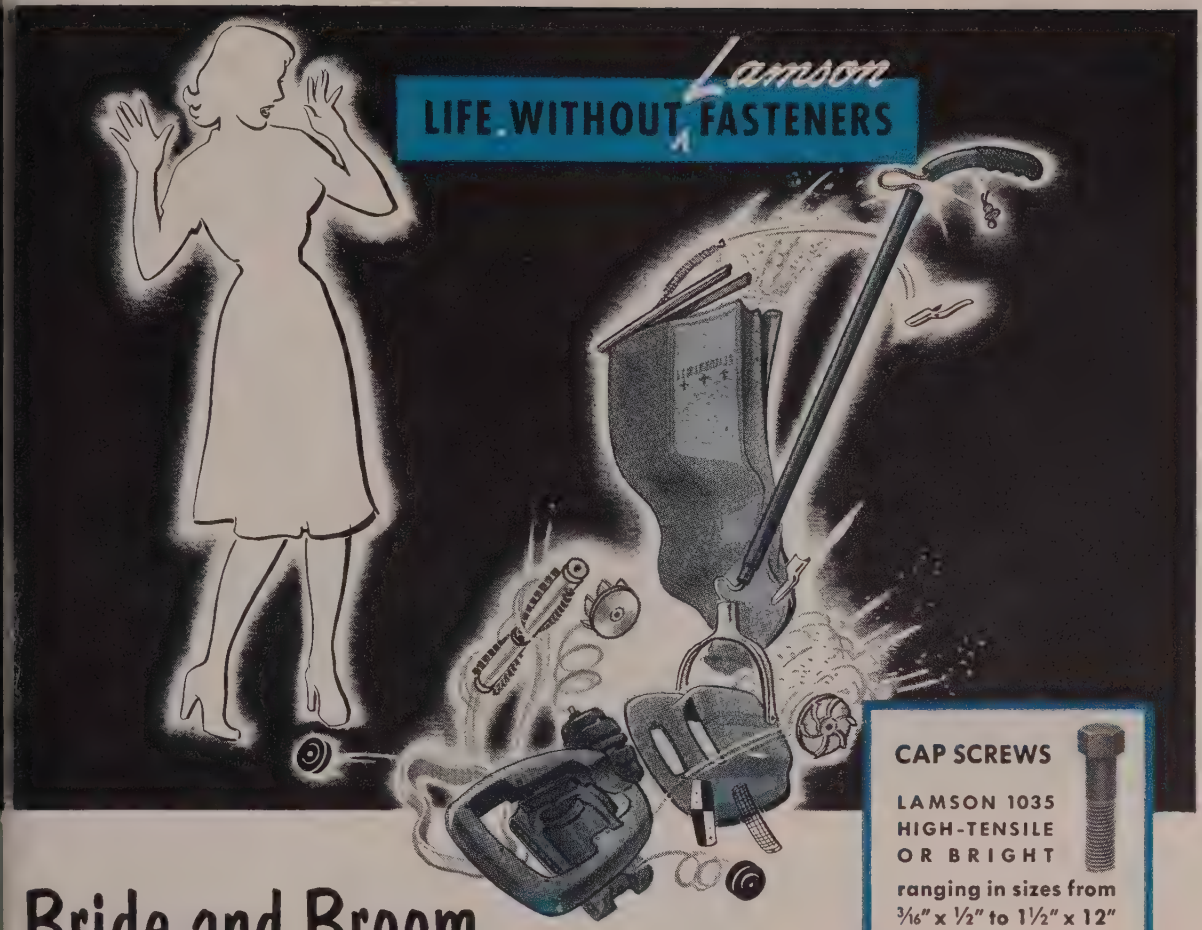
How Output Gets Around

Congratulations upon your excellent article, No. 6 of a Management Series on distribution, (Aug. 3, p. 57). You have put together a well rounded and comprehensive story that should be given wide circulation.

Will it be possible for us to beg, buy or otherwise get our hands on about 50 of these reprints? I want to send them to members of the Chamber's distribution committee.

Charles W. Harbaugh
manager, Domestic Distribution Dept.
Chamber of Commerce of the U. S.
Washington

• *Sent.—ED.*



Bride and Broom

● It takes fasteners for a clean sweep as this startled bride has suddenly discovered. No fasteners, and it's back to the broom!

Fortunately this doesn't really happen to bright new vacuum cleaners. But it serves to emphasize the importance of fasteners to modern appliances . . . as well as most other products.

Yet, despite their importance, the cost of the fasteners that are used in a *single unit* of a product represents a relatively small part of the total material cost. So *you* can *always* afford to use the type of bolts, nuts or screws that *look* best and *do the job* best.

Our fastener engineers will be glad for the opportunity to review your fastening methods with you—without obligation, of course.

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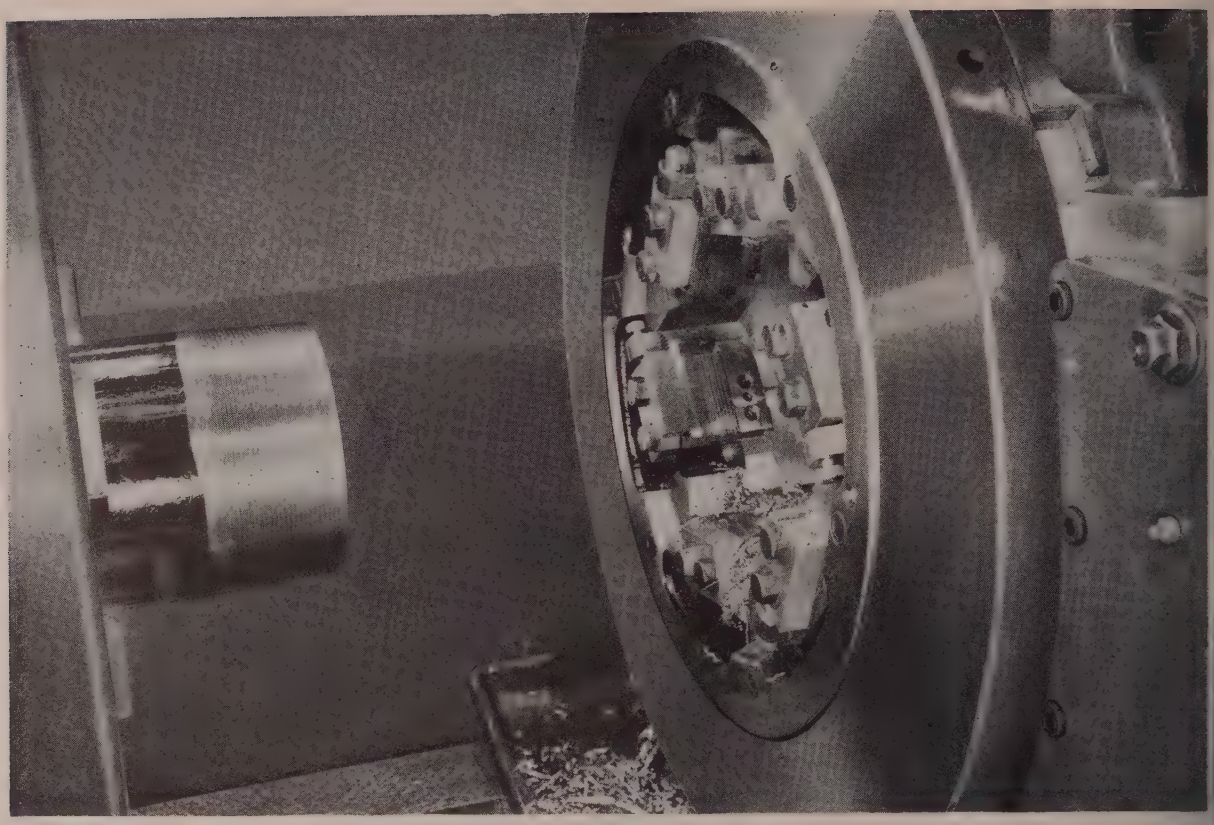

LARGE TEXAS SHOP USES LANDIS PIPE MACHINES *Exclusively . . . .*

TEN LANDIS Receding Chaser Pipe Threading Machines are used by Atlas Pipe, Inc., largest mill-type pipe finishers on the Gulf Coast, for threading oil tubular goods.

These machines are installed in an offset position so as to permit uninterrupted production. Typical production figures show: the 4¾" machines threading 74 joints (148 threads) per hour from 2⅜" upset tubing—the 8⅝" machines averaging 20 joints (40 threads) per hour from 5½" casing. All threads are 8 pitch to API standards.

Mr. Becker, Plant Manager, highlights the important production advantages of LANDIS Pipe Machines when he says that they were selected for their flexibility, versatility, and the uniform threads produced. Thread uniformity is made possible by massive construction, leadscrew control of the carriage movement, a precision-built die head featuring LANDIS Tangential Chasers, and an attachment which mechanically controls the degree of taper.

These machines offer flexibility through wide range coverage—three sizes of machines (4¾", 8⅝", 13⅜") thread all pipe sizes from 1⅝" to 13⅜". Ease of set-up is also important — a change of diameter and length in less than two minutes, a complete change for diameter, pitch, taper, and length in 40 minutes.

LANDIS Receding Pipe Machines perform four other pipe-fabricating operations in addition to threading: cutting off, chamfering, reaming, and the making and breaking of collars. For more information, write for Bulletin C-77.

THE LANDIS *Machine* CO. 50TH ANNIVERSARY WAYNESBORO PENNSYLVANIA

THE WORLD'S LARGEST MANUFACTURERS OF THREAD GENERATING EQUIPMENT

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that builds reputation
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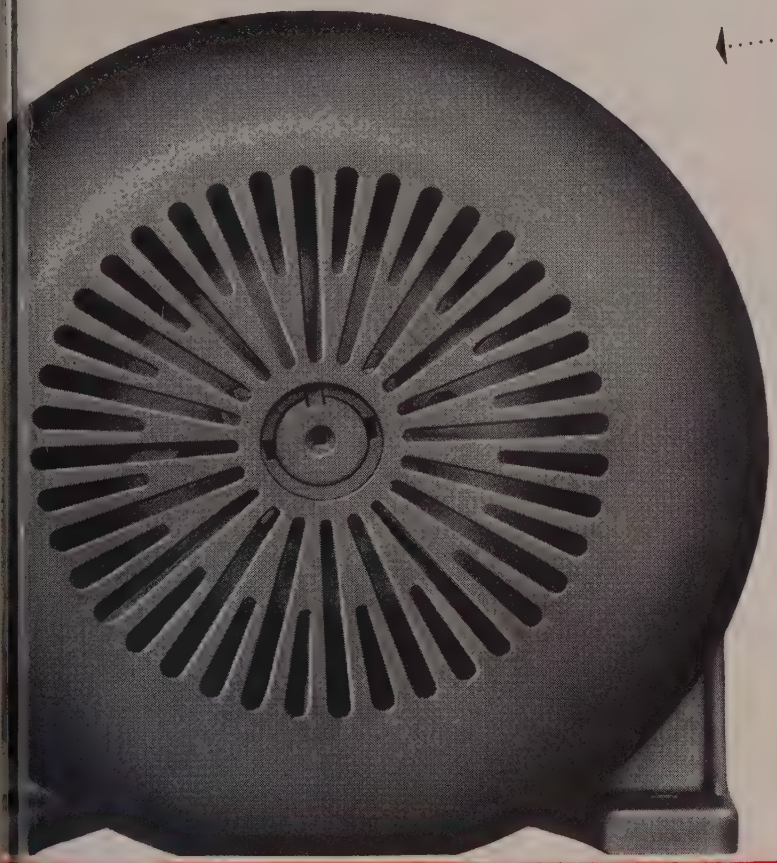

If your product needs a power source, look to Delco for the motor that will serve you best. Delco makes motors for most industrial applications . . . motors famous for dependability and long life under the toughest operating conditions.

So . . . check on Delco. You'll find a Delco motor that fits your needs. For complete details write to Delco Products, Dayton, Ohio, or to the nearest sales office listed below.

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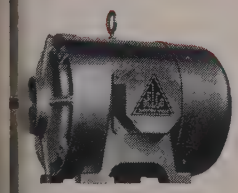
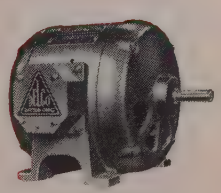
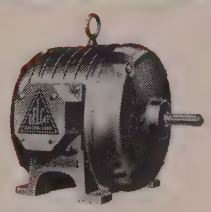


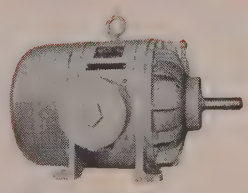
lly Enclosed Fan-Cooled Motor



Open Ball-Bearing Motor



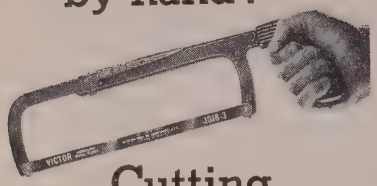
Totally Enclosed Motor



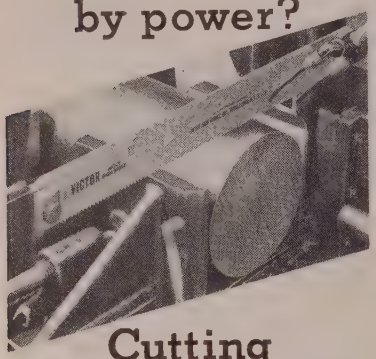
Explosion-Proof Motor

LES OFFICES: Atlanta • Chicago • Cincinnati • Cleveland • Dallas • Detroit • Hartford • Philadelphia • St. Louis • San Francisco

Cutting by hand?



Cutting by power?



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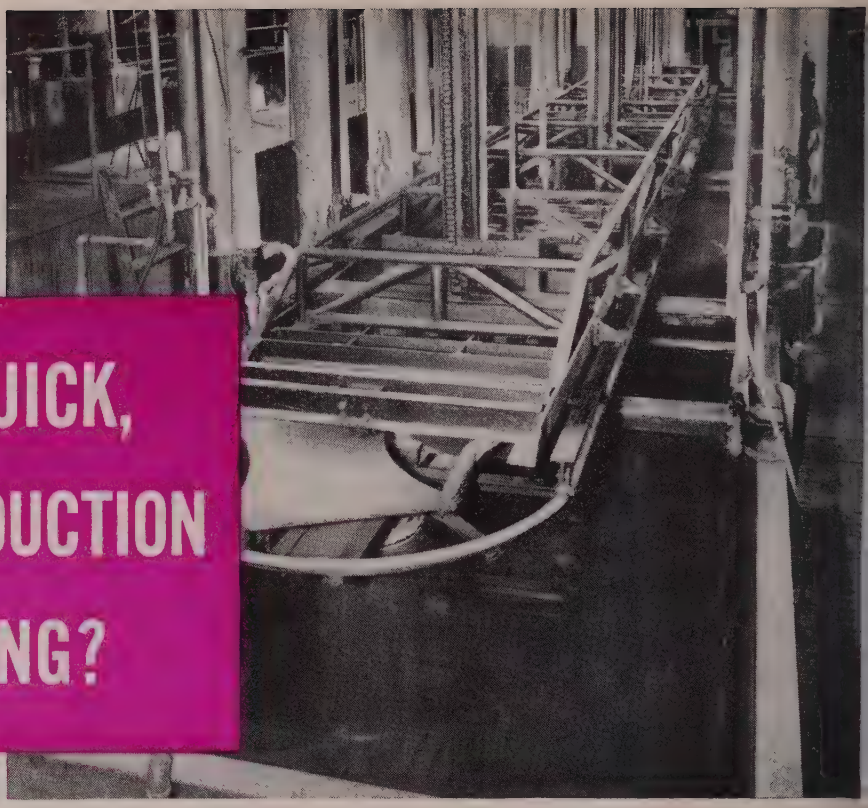

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If you have cleaning problems . . . let the Udylite Corporation provide the answer. Your Udylite Technical Man will show you a faster, more economical, AUTOMATIC way to clean metal parts. Call him today or write direct for all the facts.

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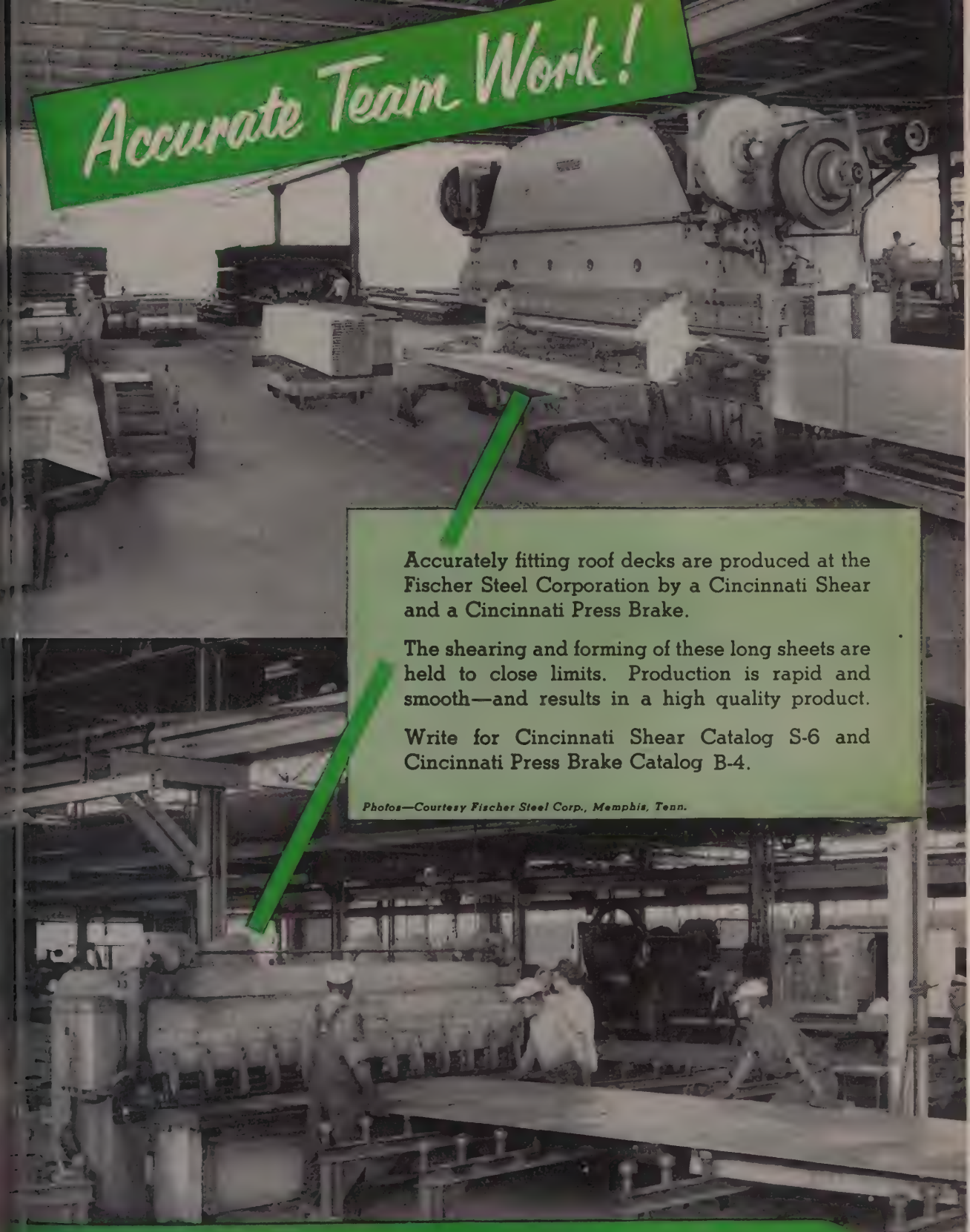
THE Udylite CORPORATION
DETROIT 11, MICHIGAN



Accurate Team Work!

Accurately fitting roof decks are produced at the Fischer Steel Corporation by a Cincinnati Shear and a Cincinnati Press Brake.

The shearing and forming of these long sheets are held to close limits. Production is rapid and smooth—and results in a high quality product.

Write for Cincinnati Shear Catalog S-6 and Cincinnati Press Brake Catalog B-4.

Photos—Courtesy Fischer Steel Corp., Memphis, Tenn.

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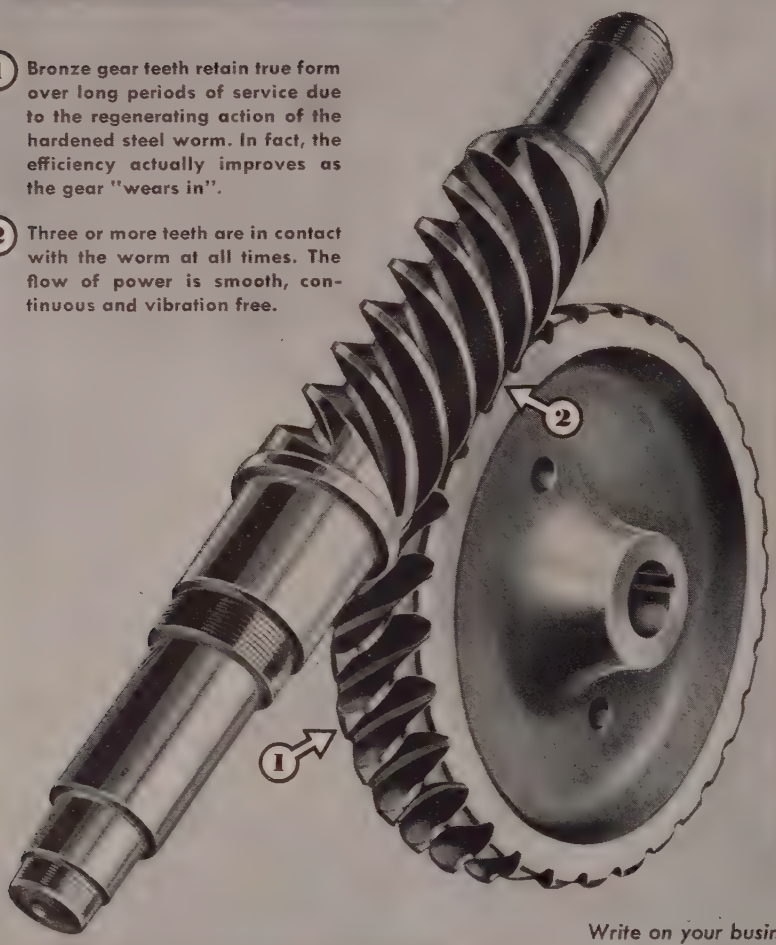
DE LAVAL
WORM GEAR SETS

can take "hard knocks"

1. Bronze gear teeth retain true form over long periods of service due to the regenerating action of the hardened steel worm. In fact, the efficiency actually improves as the gear "wears in".

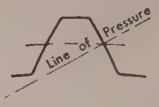
2. Three or more teeth are in contact with the worm at all times. The flow of power is smooth, continuous and vibration free.



High Shock Load Capacity

Standard 14½° involute spur gear tooth and old time worm tooth.

20° stub spur gear tooth.



De Laval Worm Gear tooth. Note line of pressure falls inside base of tooth.

Write on your business letterhead for Catalog 5000

De Laval worm gear sets are designed to take punishment year-in, year-out. Gear teeth are under a crushing, instead of a bending load. Thus they withstand extremely high momentary and shock loads damaging to other forms of gearing. They need little attention even under the most rugged operating conditions.

De Laval manufactures these heavy-duty sets in a wide range of ratios from 3:1 to 100:1, with ratings of .1 hp to 550 hp and center distances from 3″ to 36″. It pays to design around these De Laval stock sizes. Special sets, however, can be furnished to any detailed specifications.

Proven applications of De Laval worm gear sets include the machine tool industry, rolling mills, process machinery, cranes and hoisting equipment and many similar uses.

DE LAVAL *Worm Gear Sets*

DE LAVAL STEAM TURBINE COMPANY
860 Nottingham Way, Trenton 2, New Jersey

SET CUTTING SPEED HERE

There is a "best" cutting speed for machining with every combination of material and tool. Set that cutting speed here by turning the knurled ring.

SELECT DIAMETERS HERE

The operator merely turns the handwheel to the diameter of each successive cut. The Selector automatically shifts to the proper spindle speed.

Instant shifts to any one of 12 spindle speeds make it easy for the operator always to use the most efficient cutting speed. Reduces cutting time to a minimum with no time-wasting calculations and no physical effort.

Actuated by a mere touch to the wheel, the Speed Selector functions automatically, leaving the operator free to index the turret and present new tools to the work, thus reducing waste time between cuts. It's one of many features on Gisholt Turret Lathes that pay for themselves in a hurry.

GISHOLT MACHINE COMPANY
Madison 10, Wisconsin

THE GISHOLT ROUND TABLE
represents the collective experience of specialists in the machining, surface-finishing and balancing of round and partly round parts. Your problems are welcomed here.

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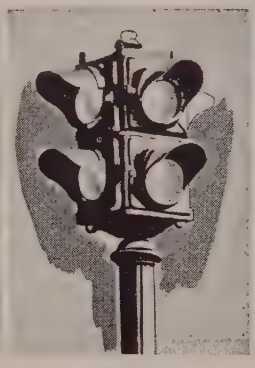

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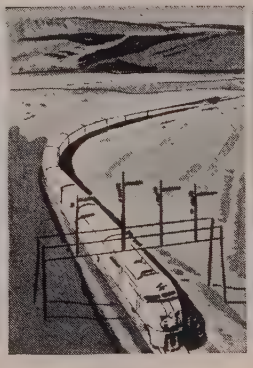

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"More Power to You"

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Sales Offices in Principal Cities of the United States

Cable FIRST

WIRE and CABLE

Copper, bronze and aluminum conductors in thousands of different sizes and types of product. Constructions and insulations of every modern variety.

This is General Cable, a *prime source of supply* for everyone who generates electricity, distributes electricity or utilizes electricity.

Whatever your electrical wire and cable need, whenever you need it—say "General Cable" to your purchasing agent, your distributor—or call on the nearest General Cable office.

ONE Source of Complete Supply

ONE Completeness of Service

ONE Standard of Quality

For Quicker Service Anywhere in the United States...General Cable maintains

22 Sales Offices

14 Resident Sales Representative Locations

Over **600** Distributor Sales Locations

6 Regional Stock Distribution Points

6 Manufacturing Plants and Stocks

GENERAL-PURPOSE CONTROL

Fhp motor starter

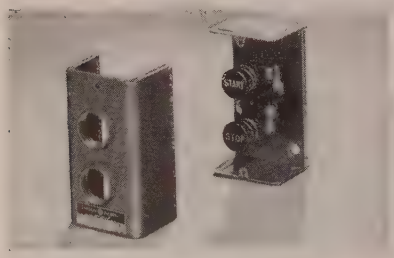
1—7½ hp manual motor starters

A-c magnetic motor starter

Combination motor starter

Reversing motor starte

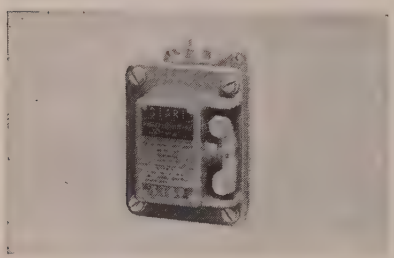
Choose from G.E.'s complete line of push buttons

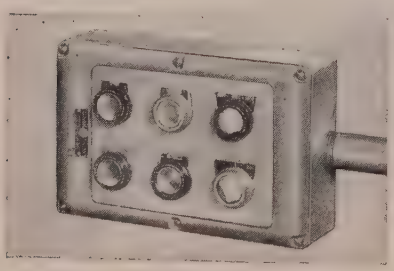


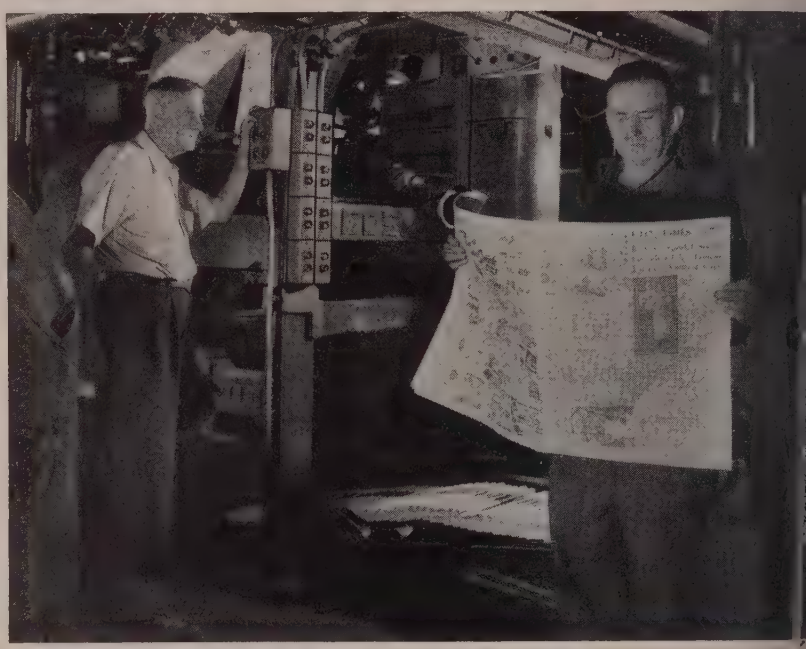
Standard-duty station, cover removed

Heavy-duty, for wall or flush mounting

Standard-duty watertight station


Standard-duty explosion-proof enclosure


Oiltight station mounted horizontally


General Electric push button installation at Oklahoma Publishing Company. Mounted on this ne paper press are eight heavy-duty stations of two units each together with a six unit oiltight stat

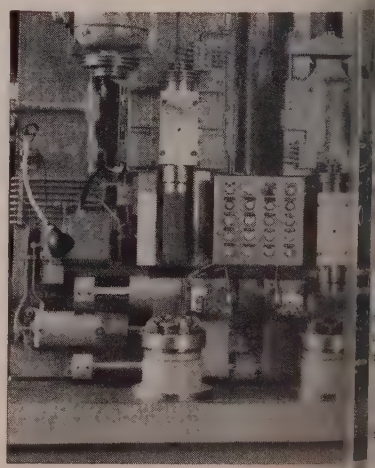
You'll find the right push-button unit or station for your particular application when you select a dependable G-E control accessory. All units have a continuous rating of 10 amps for all voltages.

THREE BASIC TYPES

Standard-duty—for average applications. Enclosures include general-purpose, dust-tight, watertight, and explosion-proof. Over-all rugged construction includes fine-silver double-break contacts which make contact maintenance virtually unnecessary. And wiring is easy—front-connected terminals, ample space speed installation. For further details, write for Bulletin GEA-3469C.

Heavy-duty—designed to withstand the roughest industrial use. Contacts are heavier than in standard-duty forms; enclosures are heavier gage steel. Designed for maximum flexibility to provide for requirements which cannot be accommodated in standard-duty line. Forms are available with selector switches, indicating lights and maintained contact buttons. Forms for palm or foot operation are also available. Bulletin GEA-5043A gives complete details on these stations.

Oiltight—adapted to machine tool service or where oil or coolant is present. All stations meet JIC specifications in every detail. Strong, lightweight, cast aluminum enclosures are designed for convenient wiring. The units install easily and a specially designed wash keeps the units oiltight with normal hand tightening. Bulletin GEA-5779A gives ratings and complete information.


Twenty-unit G-E oiltight station on special hydraulic-actuated duplex machine built by Snyder Tool and Engineering Co., De

NFORMATION FOR PRODUCTION AND MAINTENANCE

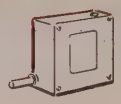
Reduced voltage starter

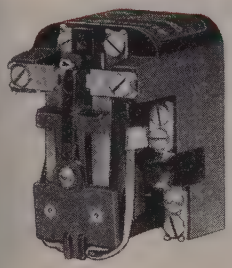
Heavy and standard-duty push-button stations

General-purpose relay

A-c and d-c solenoids

Roller-lever type limit switch

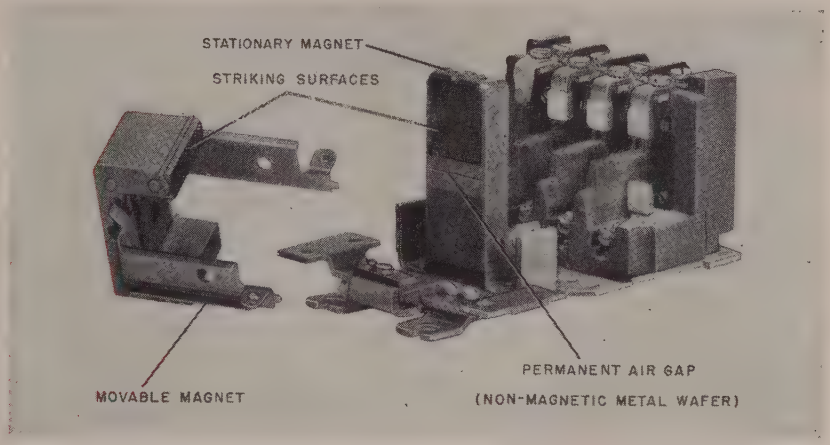

Rotating-type limit switch



GENERAL-PURPOSE RELAY ESIGNED FOR LONGER LIFE

e new CR2790E relay reduces your tory—the basic relay and accessories a variety of applications. For gen- control-circuit applications, as a onal-hp motor starter or, in com- ion with a magnetic switch, for olling larger motors. Continuous nt rating is 10 amps up to 300 volts C or DC. New long-life shunt as- top electrical performance. Bulletin 257C lists available accessories, s and dimensions.

G-E MAGNETIC STARTER FEATURES PERMANENT AIR GAP



The G-E starter has a **permanent** air gap, a non-magnetic metal wafer mounted in a stationary magnet structure. Magnets never stick closed because of residual magnetism. The air gap is safely away from striking surfaces so the movable magnet cannot wear it down, no matter how often the starter is operated.

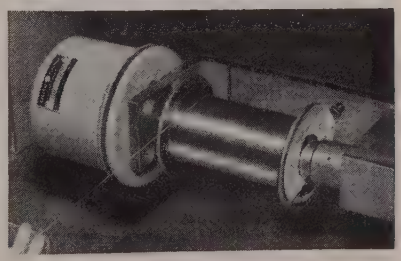
On some starters the air gap disappears as the magnets wear. With a G-E starter, however, you can be sure that every time you push the STOP button the magnet will drop out and stop the motor.

You're assured reduced maintenance, long mechanical life when you specify G-E magnetic starters.

MAGNETIC BRAKE KEEPS TENSION CONSTANT

E.'s new tension brake—the first kind—is a magnetic device free of asic disadvantages of friction de- such as wide tension variations and wear. You'll find applications for ew brake wherever a constant ten- s required—for yarns, rubber, glass and small diameter wire. Simple compact, the brake holds tension nt at all speeds.

e size 200 brake has a torque range 0.1 to 0.5 oz. in. and a tension from 4 to 10 grams. Shown at the in a textile application, the brakes ounted on a magazine-type warp- eel. The larger brakes, sizes 300 00, have a torque range of 1.4 to 14 . over a speed range of 0 to 1500 Write for Bulletin GEA-5867.



0 tension brake in resistor wire-winding tion. Increase or decrease tension by easy-to-read, calibrated adjusting cap.

NEW G-E STOCKING PLAN ASSURES PROMPT SHIPMENT

G.E.'s new Prompt Service program assures you faster, better service for your order. The program is based on perpetual stocking in your area, and prompt shipment of widely used general-purpose devices. You pay no premium for this service and you'll need no follow-up on these orders. You can reduce your control inventory. Check coupon for complete information.

General Electric Company
Section B730-46
Schenectady, N. Y.

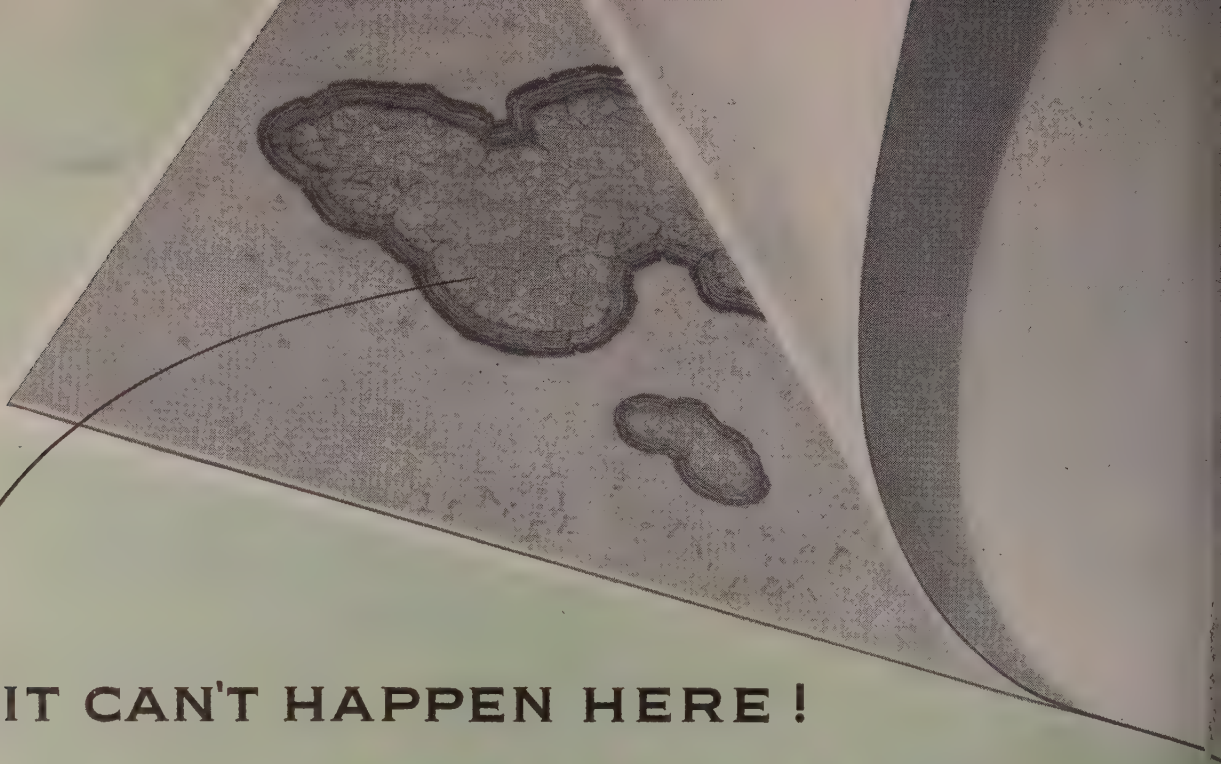
Please send me the Prompt Service Bulletin listing the general-purpose control devices stocked for immediate delivery in my area.

Name_____

Address_____

information contact your nearest G-E representative, agent, or distributor, or write Section B 730-46, General Electric Co., Schenectady 5, N. Y.

GENERAL ELECTRIC



IT CAN'T HAPPEN HERE !

Weirzin

ELECTROLYTIC ZINC-COATED STRIP

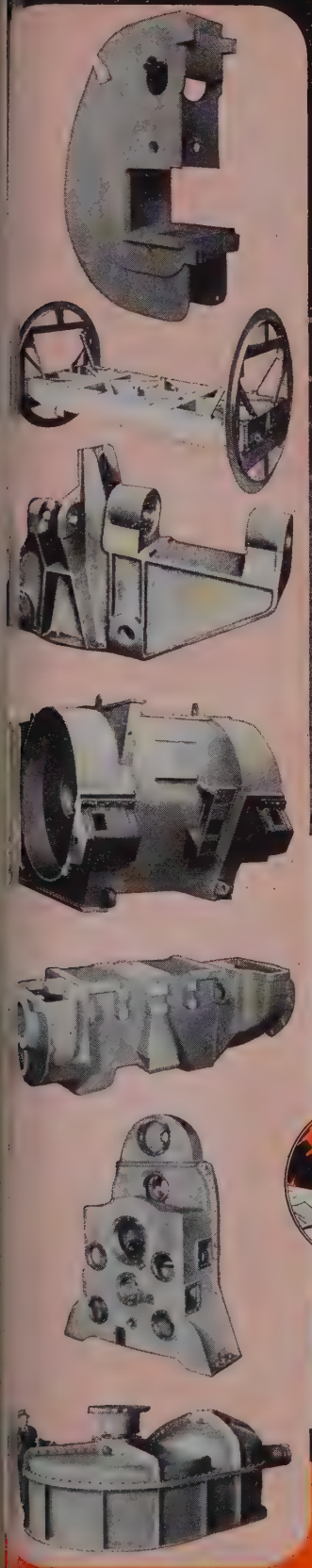
Is Permanently Protected Against Underfilm Corrosion

Weirzin steel strip is protected for life against costly underfilm corrosion. The tight, malleable zinc-coating actually becomes a part of the steel and remains intact even under extreme conditions of temperature and humidity. Further protection against corrosion is offered in Weirzin treated with Bonderite—and is recommended for any parts subject to atmospheric corrosion, or for enameled, lacquered or painted parts. Exhaustive tests have proved that the added protection that Bonderite offers is worth double its cost. Also of great interest is the fact that fabrication of Weirzin does not weaken the protective coating. After deep drawing, forming and punching, the zinc-coating remains unruptured and evenly deposited. You can be sure that your product is protected when you use Weirzin. Send for a sample today—make your own tests—see how your product can be made better . . . with Weirzin.

WEIRTON STEEL COMPANY

WEIRTON, WEST VIRGINIA

NATIONAL STEEL CORPORATION



Use WELDED STEEL for Greater Strength with Less Weight!

Illustrated above is a twenty-two ton Moving Cross-Head for a 2500 ton Press. This and other units illustrated at the left are typical of thousands of Steel-Weld Fabricated parts and assemblies produced and machined by Mahon for hundreds of manufacturers of heavy machines and equipment. If parts of your product could be redesigned and produced to better advantage through Steel-Weld Fabrication, or, if you require a limited number of large heavy pieces, in which pattern costs are a consideration, you can turn to Mahon with complete confidence . . . personnel and facilities are available within the Mahon plant to do the complete job from drawing board to finished machining. You will find in the Mahon organization a unique source with complete ultramodern fabricating, machining and handling facilities to cope with any type of work regardless of size or weight . . . a source where skillful designing and advanced fabricating technique are supplemented by craftsmanship which assures a smoother, finer appearing job embodying every advantage of Steel-Weld Fabrication. See Mahon's Insert in Sweet's Product Design File, or write for further information.

THE R. C. MAHON COMPANY
DETROIT 34, MICHIGAN

Engineers and Fabricators of Steel in Any Form for Any Purpose

MAHON

1803

EXPERIENCE FOR SALE

SINCE 1803

. . . Perry Used It In 1812

The American solid shot that raked and scattered and sunk the British ships in the Battle of Lake Erie were cast by a parent of the Mackintosh-Hemphill Company. ¶One of these cannon balls is still retained. Tests have shown it to be solid throughout. *Today's standard casting practice could not duplicate it.* Mackintosh-Hemphill *experience* of 122 years ago, still carries a profitable lesson. ¶Just as this *experience* helped to write political history, so has it aided in making history in industry. ¶It has solved, in its 131 years of existence, hundreds of difficult metals-industry problems. Much of the machinery in common use is practical evidence of such successful solutions. ¶Today, Mackintosh-Hemphill is assisting the metals industry with equal effectiveness. Its *experience* is at *your* call . . . *experience* that can translate itself into new methods, new machinery for all departments of steel and non-ferrous processing and finishing. We ask the opportunity to work with you.

The above copy and illustration which appeared almost two decades ago still defines the Mack-Hemp story

MACKINTOSH HEMPHILL
PITTSBURGH

How M-H Experience Can Be Put To Work For You

Mackintosh-Hemphill has available a means of cutting sheet mill investment per ton capacity squarely in half . . . and at the same time permitting economical operation on partial production schedules.

This advertisement appears in November, 1934, issue of Fortune

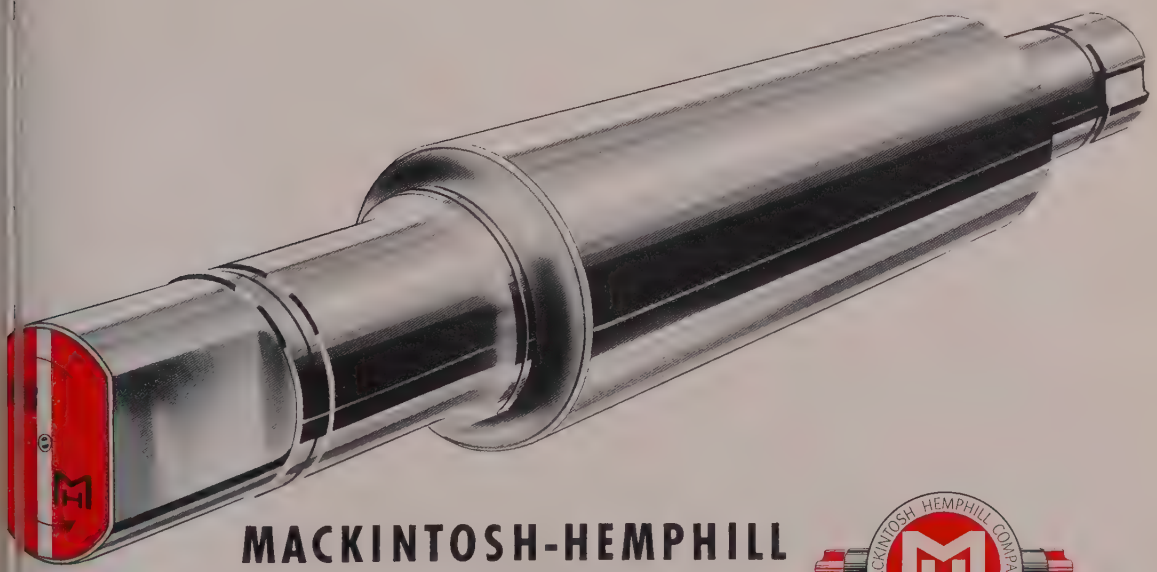
1953

Mack-Hemp's

one hundred fifty years of service to the metals industry

Know-how and experience—one hundred-fifty years of it—are in Mack-Hemp Rolls *with the striped red wabblers.* The *know-how* comes from doing, the *experience* from service to, and cooperation from, our friends in the metal-forming industries.

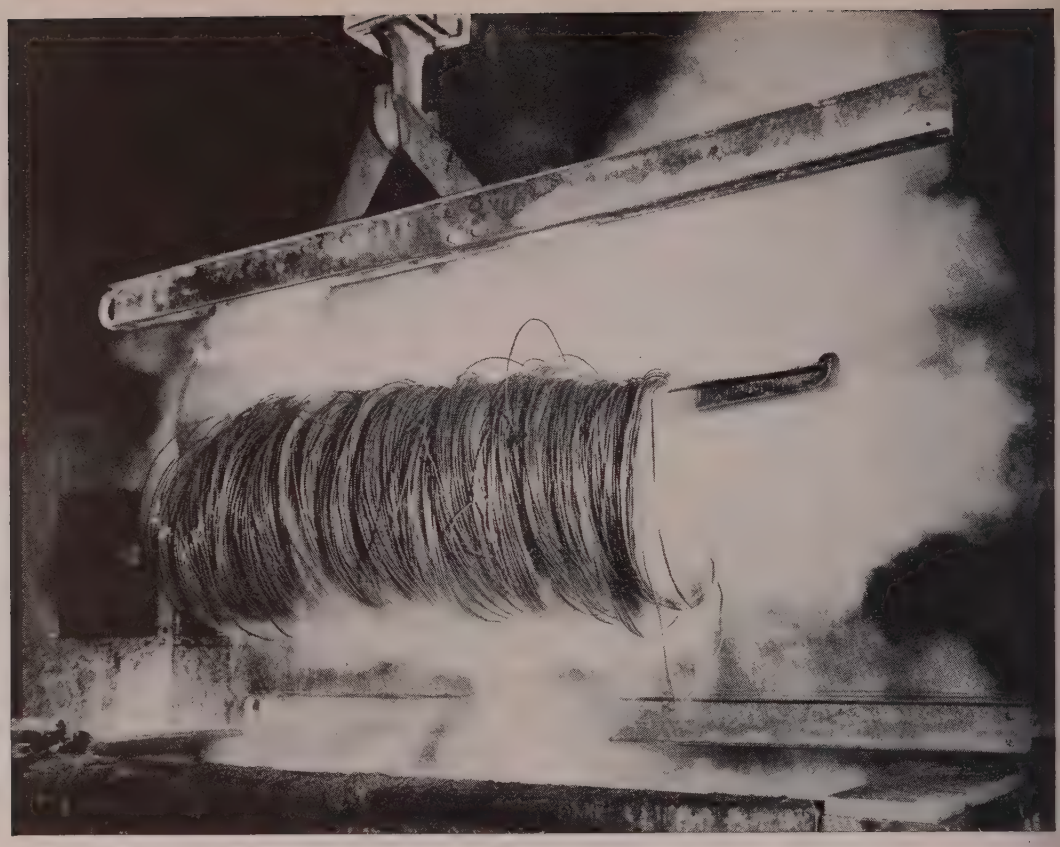
The country was young, and so was the M-H parent company when it cast cannon balls for Perry. But the pioneering zeal and ability to serve has grown with time. Check the complete line of M-H rolls with us. We'll be glad to discuss your rolling mill problems.



MACKINTOSH-HEMPHILL
COMPANY
Makers of the Rolls with the Striped Red Wabblers
PITTSBURGH AND MIDLAND, PA.

MACKINTOSH-HEMPHILL PRODUCTS INCLUDE: rolls . . . levellers . . . steel and special alloy castings . . . completely integrated strip mills . . . heavy duty engine lathes . . . Mackintosh-Hemphill rotary straighteners . . . shears . . . improved Johnston patented corrugated cinder pots and slag handling equipment . . . shape straighteners . . . end-thrust bearings

METALLURGICAL PROPERTIES OF ALL M-H ROLLS ARE CAREFULLY CONTROLLED FOR MAXIMUM SERVICE



Monel pickling hook used at the Pittsburgh Steel Co., Pittsburgh, Pa. Fabricated by Youngstown Welding and Engineering Co., Youngstown, Ohio.

Reconditioned after 7 years in use!

Monel pickling hooks after "minor surgery" and welding are ready for more years of service

Back in 1944, Pittsburgh Steel Co. installed Monel hairpin pickling hooks.

Monel® was selected after many tests with other materials that failed in less than a year.

Operating conditions were tough, pickling in 10% sulfuric acid at 180°, carrying a load of 3,000 pounds.

But Pittsburgh Steel felt that Monel could take it.

And they were right!

After *seven* years in use, the hooks showed signs of weakening only at the acid line.

And the fabricators, Youngstown Welding & Engineering Co., remedied that!

They cut out the corroded section and welded in new Monel.

Now, Youngstown feels that the hooks are almost as good as new and will give many more years of service.

This is a typical example of how fabricated Monel pickling equipment can give long service life—then be reconditioned with a small amount of material to give additionally long service.

Tough, corrosion-resistant Monel equipment can help you increase the efficiency of your own pickling room, too. Monel crates, racks, chains, hooks, and accessories are used by many of the nation's leading plants to give increased payloads and longer service life.

It is advisable to place equipment orders with your supplier well in advance of scheduled use. Distributors of Inco Nickel Alloys can supply the latest information on availability from warehouse and mill.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York 5, N. Y.

INCO TRADE MARK **MONEL**... for minimum maintenance

Metalworking Outlook

Trend in Plastic Pipe

Watch for more producers of steel tubing to enter the plastic pipe market. Youngstown Sheet & Tube Co. got in last week by acquiring an interest in Fibercast Corp., Tulsa, Okla. In June Republic Steel Corp. entered the field via the same door, by acquiring Owings-Sharpe Inc., Magnolia, Ark., which like Fibercast is a manufacturer of the plastic product. U. S. Steel Corp.'s National Tube Division is experimenting with plastic pipe, and so are other steel tube manufacturers. The product is a natural for them, for they could market it with substantially the same sales organizations they now have.

Cola in Cans

Tin plate producers are watching with interest an experiment in New York City to market soft drinks packaged in cans, much as beer now is. Continental Can Co. made the cans and Cantrell & Cochrane Corp. produced the beverage. If the test run is successful, a new market for tin plate will open up comparable to that created by beer cans.

Confusion Confounded

If and when freight absorption comes on a big scale in the steel industry, producers will have larger headaches than when they last absorbed transport charges on substantial tonnages, in 1949. In the last four or five years, trucks have become far more important haulers of steel than formerly. Rail freight rates are complicated enough. Now, freight absorption will mean that steel company traffic managers will also have to wrestle on a big scale with a maze of truck rates, resulting from interstate, intrastate, leased-trip, contract-trip and other motor carrier classifications.

World Trade: It's Shaky

World trade is on a shaky footing. From 1919 to 1932, international commerce amounted to one-third of the world's total production. From July, 1951, to July, 1953, that proportion dropped 10 per cent. If you don't count trade in raw materials, world commerce in finished goods today amounts to only 16 per cent of the globe's total production. U. S. exports, including military grant aid, in the first six months of this year hit $8.1 billion, a slight gain from the $8.0 billion in the same 1952 period, because military shipments in this first half climbed to $2.0 billion, compared to $782 million in the 1952 months. U. S. imports in the first half reach $5.6 billion, compared to $5.4 billion in the first half of 1952.

Price Cutting in Europe

Steel exporters in the European Coal & Steel Pool are accusing each other of undercutting on the supposedly fixed prices to buyers outside the union.

All members of the pool are scrambling for business now, and the temptation is great for secret discounts and similar special arrangements.

Japan Seeks Lower Costs

Japan will never be a serious threat in world steel markets as long as its raw material costs remain so high. That's the opinion of William S. Vaughn, an American adviser to Fuji Iron & Steel Co., Tokyo. Japan's pig iron costs about $72 a ton, against about $50 a ton for the U. S. material. Japan annually imports some 5 million tons of the nearly 7 million tons of iron she consumes, and brings in about 3.5 million tons of coking coal yearly from the U. S.

GM Switches Transmissions

To avert severe production losses as a result of the Livonia, Mich., Hydra-Matic transmission plant fire, Cadillac and Oldsmobile cars will be equipped temporarily with Buick Dynaflow transmissions and Pontiac cars will be installed with Chevrolet Powerglide units. Estimates of output anticipated when the move is accomplished, about the first week in September, unofficially place production at about 75 per cent of normal at the three divisions, limited by the availability of transmissions. In the meantime General Motors Corp. has leased 1.5 million square feet of manufacturing space at Willow Run to set up a new Hydra-Matic production line. Manufacturers of the Livonia plant equipment, mostly machine tools, are already starting to repair what is usable.

The Best Since 1949

The balance between supply and demand of skilled and semiskilled labor is today about the best it has been since 1949. Shortages in the highly skilled crafts remain, of course. The electronics industry is especially short-handed, and the need for tool and diemakers, machinists, pattern-makers and molders is as urgent as ever.

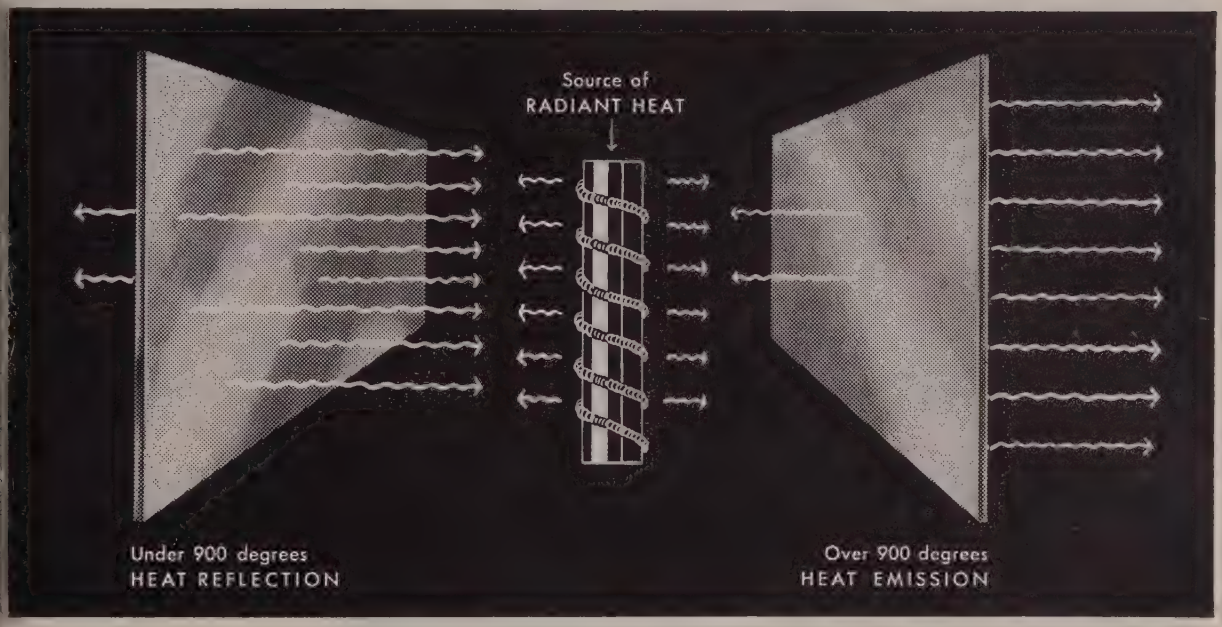
Straws in the Wind

Now in the NPA mill is a move to modify the copper order, M-11A, which would lower the quantity of copper required for defense and atomic energy needs after Dec. 31, 1953 . . . Westinghouse Electric Corp. will re-enter the room air conditioning field with a new line of units in 1954 . . . Bethlehem Steel Co. on Aug. 19 pushed the first coke from its new battery of 80 coal chemical recovery type coke ovens in Bethlehem, Pa. New capacity: 2.3 million tons annually.

This Week in Metalworking

Machine tool builders are worried about what the Defense department will do with idled defense equipment (p. 39) . . . S & S Machinery Co. plans a permanent display in Brooklyn of U. S. and foreign machine tools (p. 40) . . . Off-road machinery builders are moving for closer company integration (p. 41) . . . Construction will hit the sky-high peak of $34.7 billion in 1953 (p. 43) . . . Plumbing goods manufacturers are experiencing good business now, but they expect some of the current high volume to go down the drain in 1954 (p. 44) . . . Having trouble with plant discipline? Your foremen are the key to good relations (p. 49).

Steel that REFLECTS Or EMITS Radiant Heat



Armco ALUMINIZED Steel, the steel with a hot-dip aluminum coating, is used for *either reflection or emission* of radiant heat.

At service temperatures under 900 degrees F, the aluminum coating is an excellent reflector of heat. Service at over 900 degrees F permanently changes the ALUMINIZED Steel from a reflector into an efficient emitter of radiant heat. That's because the aluminum coating alloys with the steel base, forming a tight gray surface layer of iron-aluminum alloy. This also gives the steel an unusually good refractory coating.

In its heat-reflection range (under 900 degrees F), Armco ALUMINIZED Steel is used for such parts as reflector panels for infra-red ovens, broiler reflectors and many other parts of ranges. In its heat-emitting range (above 900 degrees F) it is ideal, for example, in combustion chambers of oil and gas furnaces.

Armco ALUMINIZED Steel is also widely used for its fine combination of heat- and corrosion-resistance. There are hundreds of applications, from automotive tail-pipes and mufflers to barbecue grills.

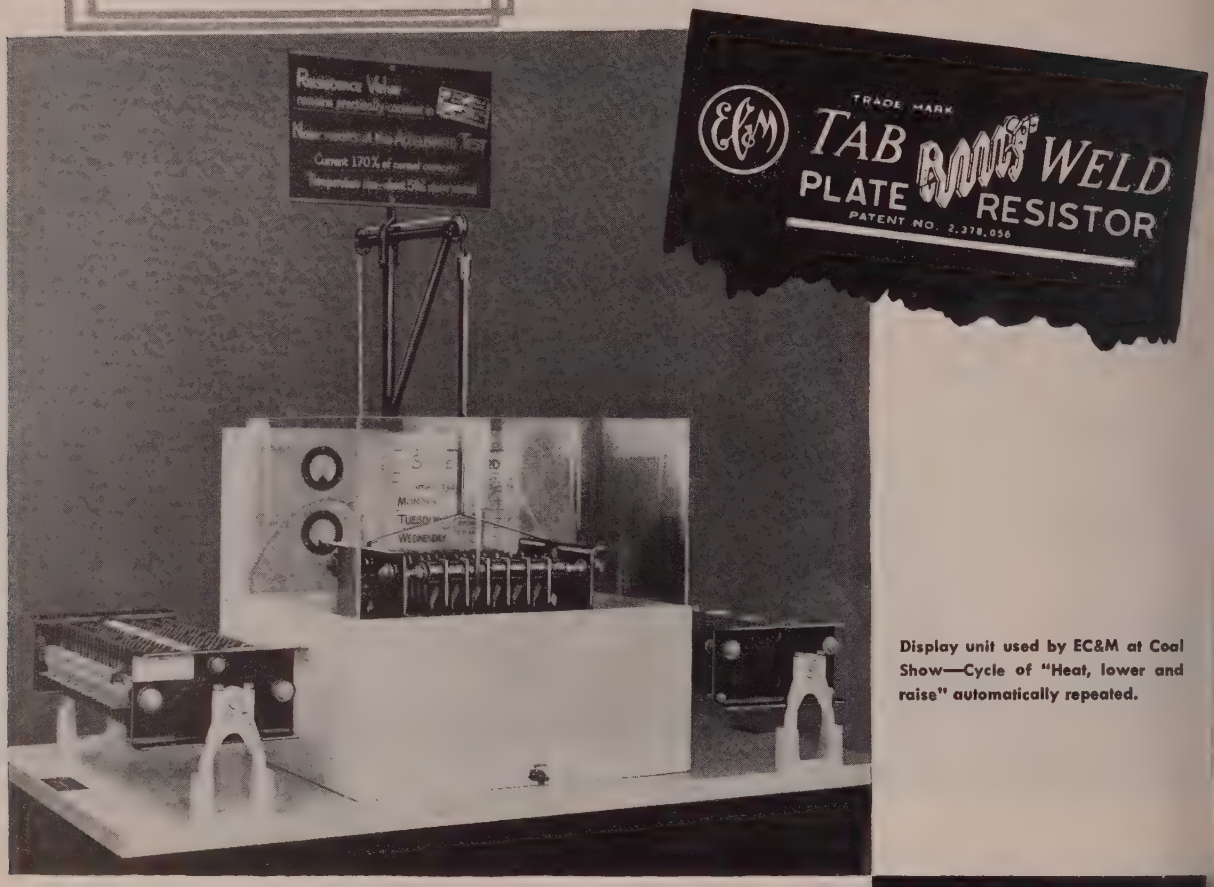
Write for the booklet, "Armco ALUMINIZED Steel."

Armco Steel Corporation

3393 Curtis Street, Middletown, Ohio
Export: The Armco International Corporation

ARMCO

harsh test fails to harm



Display unit used by EC&M at Coal Show—Cycle of "Heat, lower and raise" automatically repeated.

section OVERHEATED and quickly cooled in water about 1000 times—and no failure of any part

The severest service application would never subject a resistor-bank to the test given the above 100-ampere (continuous-rating) EC&M TAB-WELD Resistor section. Heating was accelerated by applying current 70% above normal, causing temperature to rise about 50% above rated rise in a short time. The resistor was then quickly immersed in water. Repeated about 1000 times, this EC&M TAB-WELD Section operated without attention.

Ohmic value was the same at the end of the test as at the beginning—the current-carrying path remained intact—no tightening of end-clamping nuts was needed—there was no burning at grid eyes or at tap plates.

For topmost efficiency in resistors for starters, controllers, battery-charging panels, test-panels, smoke precipitators and similar applications, investigate EC&M TAB-WELD Plate Resistors. Bulletin 942 gives complete facts. Write for a copy.

TEST DATA

Ohms at start	.244
Ohms after 1000 operations	.245
Current used (average)	170 amps.

Temperature of resistor about 550° C. before immersion

THE ELECTRIC CONTROLLER & MFG. CO.
2698 EAST 79TH STREET • CLEVELAND 4, OHIO

Excellent Choice

When Congress voted to extend the Reciprocal Trade Agreement Act it also created a Commission on Foreign Economic Policy. Executives in the metalworking industry should follow the work of this commission carefully. Its recommendations may have an important influence upon the future of our nation's economic development.

Members of the commission are charged with the difficult task of studying all aspects of our foreign trade problem for the purpose of presenting recommendations to the government for future policy. When President Eisenhower signed the extension bill on Aug. 7, he expressed the hope that the commission's study will play an important role in shaping the nation's future handling of the foreign trade problem.

The commission consists of 17 members. Five, appointed by the Speaker of the House of Representatives, are Representatives Daniel A. Reed, Richard M. Simpson, John M. Vorys, Jere Cooper and James P. Richards. Another five, appointed by Vice President Richard Nixon, are Senators Bourke B. Hickenlooper, Eugene Milliken, Walter F. George, Harry F. Byrd and Prescott Bush. Of these ten, four are protective tariff advocates, four are free-traders and two are middle-of-the-roaders.

Of the seven members to be appointed by the President, only one has been named at this writing. He is Clarence B. Randall, chairman of Inland Steel Co. To him has been entrusted the terrific responsibility and the attractive opportunity of serving as chairman of this important commission. It is a type of distinction that has been bestowed upon executives of the metalworking industry on rare occasions.

Fortunately, Mr. Randall is prepared to meet the challenge of his job with an approach that is unique. Not too long ago he was a critic of American industrialists, including himself, who were apathetic to the nation's problems of foreign affairs. Almost by accident, he was recruited to study the impact of the Marshall plan upon European industries. He became an ardent student and assiduous practioner of American foreign policy. Read the chapter "The Businessman and Foreign Policy" in his book *A Creed for Free Enterprise* and you will understand why Clarence Randall is an excellent choice as chairman of the Commission on Foreign Economic Policy.

E. C. Shaner

EDITOR-IN-CHIEF

FIRE LOSS EXCESSIVE: Midweek newspapers carried dispatches stating that the National Board of Fire Underwriters estimated that the fire losses in the United States during July "flared up to $74,938,000." This was an increase of 21.5 per cent over the loss of $61,-

675,000 suffered in July last year. It is an increase of 10.8 per cent over fire losses in June this year.

These figures are impressive and in many respects they appear to be excessive. However, two weeks ago General Motors Corp. suffered a fire in its Livonia, Mich., plant in which the losses nearly equaled the total of all fire losses in the nation for June or for July. The Livonia plant was relatively new and modern. It is owned and operated by a company that is reputed to be alert, efficient, progressive and safety conscious.

Apparently industry's best brains have something to learn about methods of effective fire prevention.

* * *

FOR NONINTEGRATEDS: For many years there has been a rather natural inclination on the part of steelmakers to resist and resent the apparent tendency in the steel industry to surrender to the idea that the day of the small, nonintegrated steel operator was gone forever. Throughout several decades, we have read letters from enthusiasts who have expressed their hope and conviction that the day will come when they do not have to put out big money for blast furnaces and open hearths in order to operate a profitable steel business.

Right now there is some reassuring evidence that the electric furnace is presenting new and attractive opportunities (p. 84) for nonintegrated operations. Significant is the fact that 52 per cent of current electric steel output is carbon steel—not alloy. According to a comprehensive study by Battelle Memorial Institute, the economics of electric furnace operation has some definite advantages over that of open hearths.

* * *

RAILS TO NEW MINES: An obscure item on the financial pages of newspapers last week announced that the Nicholas, Fayette & Greenbrier Railroad in West Virginia is constructing a 12-mile extension from Russellville to Landisburg to permit development of a coal field with reserves estimated at 85 million tons. While in this case the new trackage is of modest length, it is interesting because it represents the type of project which has accounted for most of the mileage of new track laid down on the North American continent during recent decades.

For example, there have been numerous instances in the United States and Canada where new railroad mileage has been constructed to serve recently discovered or developed large deposits of iron ore, coal or other minerals. The most notable current example is the construction of a railroad to connect the iron ore ranges of Labrador with docks on the Gulf of St. Lawrence at Seven Islands, Que.

* * *

RR LEAD IN TON-MILES: While on the subject of transportation, it may be well to expand a bit on the editorial entitled "On Rubber Tires," which appeared in the issue of July 27. In this editorial mention was made of the tremendous growth of highway transportation, as evidenced by truck movement in World War II and by the present popularity of toll roads.

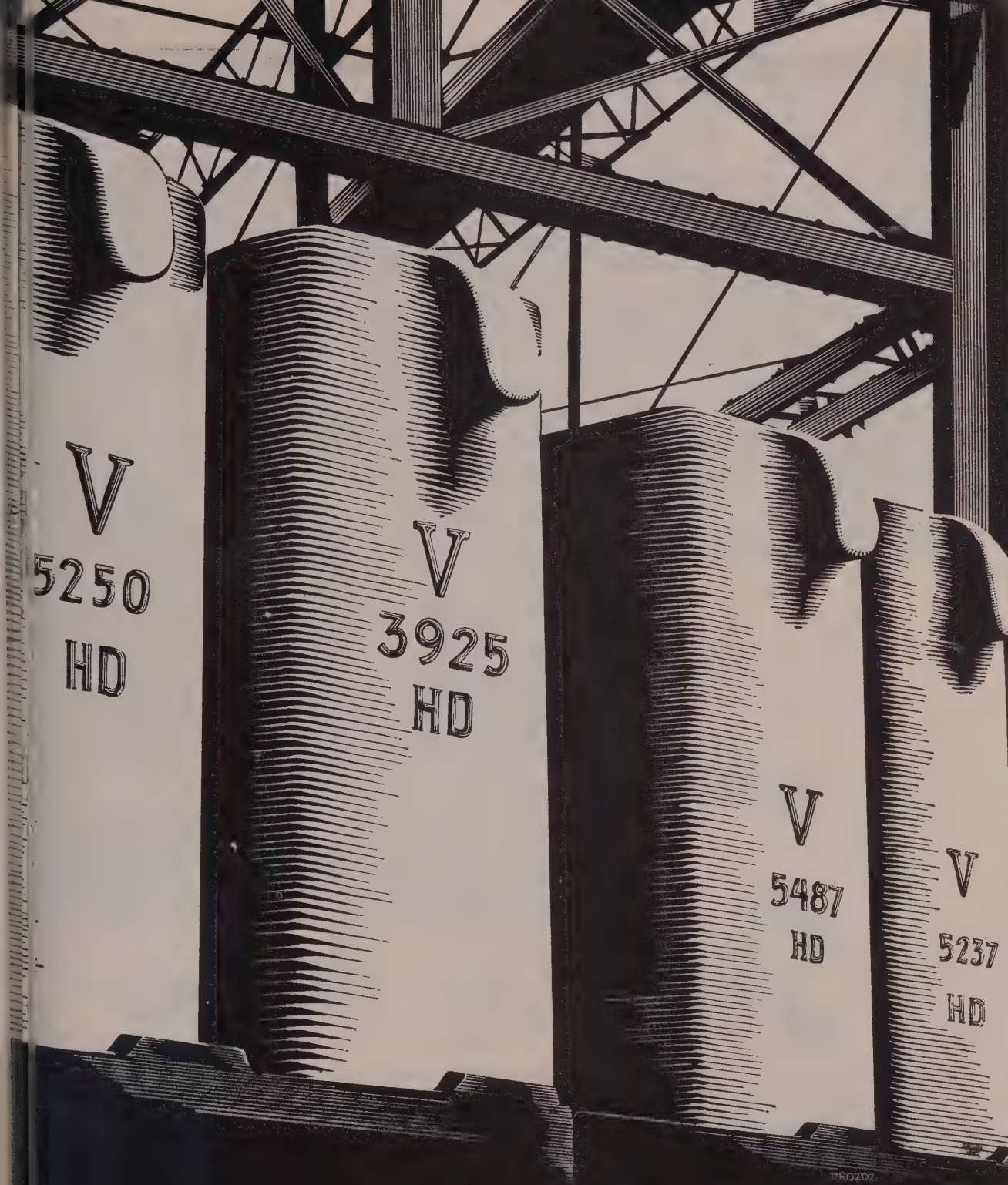
The point that needs more emphasis is that in spite of the great expansion in the movement of goods on rubber tires, the railroads still are carrying a larger volume of the commercial intercity freight traffic in the United States than are all other types of carriers combined. On the basis of ton-miles (a ton of freight moved a mile is the unit) motor trucks in 1952 accounted for 13 per cent of the total intercity freight movement whereas the railroads carried 58 per cent.

* * *

ALSO POTENT IN WAR: Also, the railroads do a whale of a job in wartime. Here are some facts furnished by the Association of American Railroads:

During the 11 months from D-Day to VE-Day in Europe the Military Railway Service hauled 18,500,000 net tons of supplies. Motor truck movement during the period was less than 3,000,000 tons. In Iran, military railroads moved 4,144,000 tons of lend-lease supplies to the Russians. Comparable truck movement was 624,000 tons. In the United States during World War II, 97.6 per cent of all military personnel and 90.5 per cent of all military freight traffic was handled by the railroads.

In Korea, the 3rd Transportation Military Railway Service has carried over 20 million tons of supplies. Nearly all of the supplies for the United Nations forces was transported by rail.



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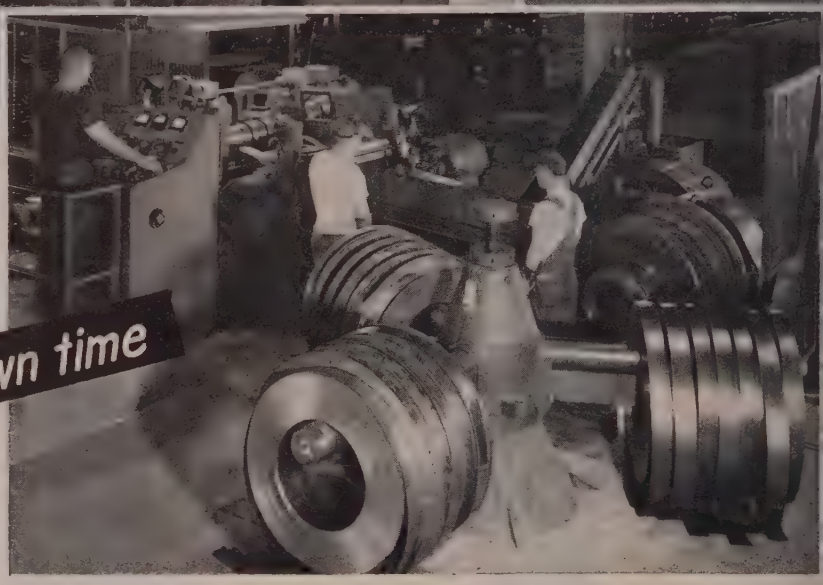

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. . . he disposes

ARTHUR S. FLEMMING
. . . he proposes

NEA

Between practice and policy machinery builders fear a squeeze

Program for Idle Defense Tools Worries Equipment Makers

MACHINE TOOL BUILDERS and other capital equipment manufacturers fear that history will repeat itself.

They're worried that the Army's new policy of defense equipment disposal might degenerate into the grab bag that existed after World War II when the War Assets Administration got rid of 115,000 government-owned tools.

Impact—Even in booming 1952, tool builders turned out only about 9,000 units. So, the WAA policies led to depressed conditions for tool builders—a situation that lasted until after the Korean war started. It left them in poor shape for a while to meet the demands suddenly put upon them; hence, the machine tool bottleneck of 1950 and 1951.

The Army denies that its current policy has a chance of leading to WAA troubles. The Detroit Ordnance Tank-Automotive Center, which originally announced the policy, is surprised at adverse reaction and believes criticism is based on a fundamental misunderstanding of the way the program will operate. Equipment makers admit that the program sounds foolproof in theory, but they believe that in practice it may lead to abuses and that history could repeat.

What It Is — The program is this:

1. Defense-idle tools can be leased by the operating plants for civilian production. Studebaker Corp., under contracts just signed, will do this with $200,000 worth of tools when it ends its 2½-ton truck production in September.

2. The government will pay the operating plants for storing the tools. At its South Bend, Ind., plant, Studebaker will store the other $1.3 million worth of tools it used in producing trucks for the government.

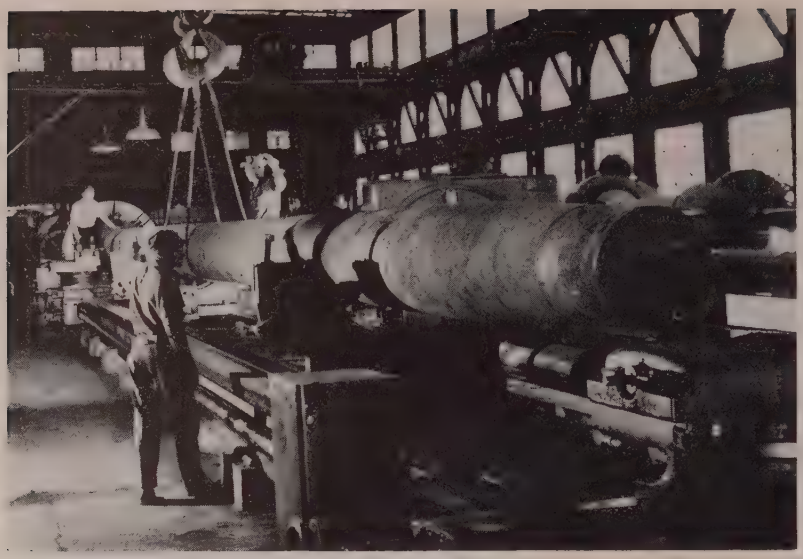
3. The government will find or erect a warehouse in which to store the tools. Tools from Ford Motor Co.'s Livonia, Mich., plant will be housed in a new warehouse near the plant after M-48 tank production is completed there in December.

4. As a last resort, the government will ship the tools to a depot for storage.

Sound the Alarm—The first point is causing the alarm. Secretary of Commerce Sinclair Weeks is championing manufacturers and has called on Defense Mobilizer Arthur S. Flemming to rule that the leasing of government-owned defense production equipment for civilian use is against the national interest. Mr. Flemming's office originally set the defense stand-by policy.

"Twenty-five per cent of all machine tools in this country—or about 400,000—are owned by the government," Mr. Weeks wrote to Mr. Flemming. "Rental of this equipment to industry for nondefense production could drastically affect the market for new machine tools for many years. The result would be to decrease the going capacity of the industry, with a consequent adverse effect upon the mobilization-readiness of this vital industry in the event of an emergency."

Baptism of Fire — The matter was also brought to the attention of Charles S. Thomas, assistant secretary of defense for procurement, production, distribution and storage policy. He was just appointed to that newly created post, and one of his first headaches will



Shaft To Drive the Navy's Newest

Into a lathe at Bethlehem Steel Co's. Bethlehem, Pa., plant goes a rough-turned rough-bored forging, destined to become a propeller shaft for the Navy's new 60,000-ton carrier *Saratoga*. The 67-foot shaft will weigh 26 tons finished

be this one. The Army thus far has been the only branch to spell out its policy.

Army officials argue that their policy of leasing equipment is a way of stretching their dollar appropriations and saving taxpayers' money. They point out that production packages will not be split up, and the tools will not be leased indiscriminately. They say that the conveyor and spray equipment Studebaker will lease would probably be damaged more by storage and reinstallation than it will be if retained in use and steady maintenance applied. Furthermore, Army argues, the rent of 1 per cent a month of the original equipment price is not attractive enough to industry to have it leap at the chance of leasing U. S. equipment.

The Extent—The Army's tank-truck stretch-out as now constituted (see STEEL, Aug. 10, 1953, p. 59, for details) will eventually idle $615 million worth of tools. Thus far, equipment has been leased to Studebaker only. Cutbacks by the Air Force and Navy are not yet fully determined, but they're coming.

Industry and government officials were thrashing out the matter last week. It's a good bet that the present Army policy will be modified somewhat.

U. S. To Count Its Tools

Preparatory to determining how to spend the $250 million appropriated by Congress for procurement of "reserve tools and facilities" in fiscal 1954, the Department of Defense is working on an inventory of government-owned machine tools and related industrial equipment and also an inventory to show the availability of privately-owned machine tools and equipment in contractors' plants. No date has been set for completion of the inventories.

Who Will Operate Tank Plants?

The long-considered question of whether the particular armed service or the contractor will operate ordnance plants after they have served initial production requirements and are placed in stand-by condition will be answered shortly.

A Pentagon spokesman told STEEL, "We are dickering with the boys" about it. "The boys" in this case are: Ford Motor Co., which is to phase out on M-48 tanks by the end of 1953; Chrysler Corp. and American Locomotive Co., which are to phase out on M-47 tanks by the end of 1953, and Chrysler, which is to phase out on light and medium tank engines by Apr. 1, 1954.

All in One Place

S & S Machinery plans a permanent display in Brooklyn of U. S., foreign machine tools

A PERMANENT EXPOSITION of all nations' machine tools will open Oct. 5 in Brooklyn, N. Y., in the "largest tool display ever assembled under one roof by an individual organization."

Gathered in 150,000 square feet at 132-54th St. in Brooklyn will be approximately 1000 production and maintenance tools of American and foreign make. Sponsored by S & S Machinery Co., tool importer, the show will display products of several hundred American and foreign manufacturers.

Cheek by Jowl—The company has invited competing American and foreign manufacturers to display their products on a permanent basis "at nominal cost," subject to the limitations of space. It believes prospective customers from all over the world can examine and test a wide variety of machine tools—from big boring mills down to small precision screw machines—at a centralized location, eliminating necessity for extensive foreign travel.

Says S & S: "The exhibit will raise the curtain on many new American and foreign tools, types and uses of which have never before been exhibited." Trained technicians and sales engineers will staff the exhibit, and all tools will be available for demonstration in actual operation.

Previous Success—Decision to stage the exposition by S & S was due in large measure to the success of an S & S display in September, 1951, of European automatic screw machines and grinders.

"Based on this show and what the company found out marketwise we got into the tool business to the extent we're in now," said L. D. Srybnik, co-owner. Some $3 million worth of S & S represented equipment will be on the floor during the show.

AF Disposal Plan Under Way

Air Materiel Command has found that the Air Force has about 50,000 items valued at $241 million in excess of its needs which will be di-

sed under its project "Spring an."

Second phase of the project will to determine what excess can used by other armed forces or vernment agencies, and the third p will be the actual disposal of property. Most of it is equipnt left over from World War II. Conducting the project are 15 the AF depots throughout the ntry. Not included in the items 15,663 aircraft engines valued $266,760,148. Certain parts will removed from the engines for by the AF and the remainder of engines will be declared excess. First chance at the excess equipnt will go to the armed forces; vernment agencies will be next, then the remaining property go for public sale. Sale dates be announced later by the Air ce.

d Imports Diesel Tractors

The first quantity shipment of Fordson Major Diesel farm ctor, imported by Ford Motor , Detroit, and manufactured by d Motor Co. Ltd., England, is ected to arrive in mid-Septem- at the Port of New Orleans.

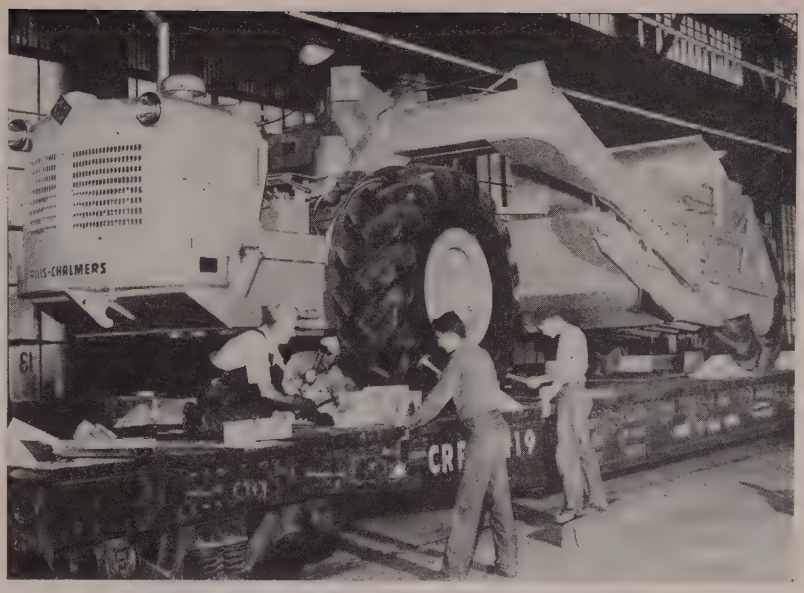
The tractor will be marketed ough the same distributor and ler organization now handling d's American-made tractors and n equipment. Initial introduc- will be limited to 10 south- t and western states where die- tractors are the most popular e.

ssey-Harris, Ferguson To Join

Massey-Harris Ltd. and all the rating companies of Harry Fer- on will be known as Massey- ris-Ferguson Ltd. this fall, n stockholders approve the ger.

Increased agricultural tractor, hinery and implement produc- is expected to result from the bination. The name Harry Fer- on will continue to be carried the products of Ferguson de- .

The five manufacturing facilities the two organizations in the S. will be pooled, along with in Canada and others in Eng- , South Africa, France and many.



To level off the bumps in the competitive road . . .

Earth-moving Equipment Makers Integrate

ANOTHER MERGER may soon be added to the growing list of such actions by earth-moving equipment companies, which are getting entrenched for a better competitive position in the industry by more integration.

Allis-Chalmers Mfg. Co., Milwaukee, has offered to exchange A-C common stock for the assets of Buda Co., Harvey, Ill. Buda makes diesel and gasoline engines in addition to fork-lift trucks, industrial plant trucks, lifting jacks and maintenance-of-way equipment.

Now Its Own Engines—Allis-Chalmers makes a line of construction equipment and is a big purchaser of diesel engines, many of which it now gets from General Motors Corp. The merger would give A-C its own source of engines.

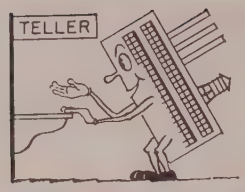
W. A. Roberts, president of Allis-Chalmers, said that his firm's directors have approved a proposal which will exchange one A-C share for each 2-1/6 shares of the 411,498 outstanding Buda shares. A Buda stockholders' meeting to consider the offer has been called for Sept. 10.

Not the First—The Allis-Chalmers-Buda merger plan is but one of a half dozen or more deals in the past year and a half in the earth-moving equipment industry. About a year ago A-C also purchased the La Plant-Choate Mfg. Co. Inc., which makes scrapers.

Last week GM announced plans to purchase the assets of Euclid Machinery Co., Cleveland. Other transactions in the past year or so include International Harvester Co.'s purchase of Frank G. Hough Co., Libertyville, Ill., and a deal with Bucyrus-Erie Co. to take over its manufacture of scrapers and bulldozers; Westinghouse Air Brake Co.'s purchase of the earth-moving equipment business of R. G. Le Tourneau Inc., and Le Roi Co.; Caterpillar Tractor Co.'s purchase of Trackson Co.; and Pettibone Mulliken Corp.'s purchase of University Engineering Corp., Rome Grader Co. and George Haiss Mfg. Co.

Deeper Trench—Caterpillar, too, announces that it will build a new motor grader and industrial wheel tractor manufacturing plant at Decatur, Ill. (see page 67).

Although the industry expects a business volume for 1953 nearly as good as the record breaking 1952, the mergers indicate that officials are looking ahead to greater competition. If and when a market decline starts, and the competition gets rougher, the larger and more integrated companies may have an advantage.



Industrial Financing:

Two decades of borrowing have set the pattern as industry continues running to banks

COME HELL or high water, Republicans or Democrats, war or peace, high or low corporate taxes, it looks like industrial financing has settled into the groove of borrowing, and it's likely to stay there for a long time.

Over a period of twenty-odd years, American industry has become used to running to the banks for a large share of its expansion capital. Many financial experts hoped that with the advent of a Republican administration, American business would increase the issuance of common stock or bonds and the American public would invest its money in them. But such is not the case.

Here's Why—There are several reasons for this. In the first place, it is the path of least resistance. Industry has developed the borrowing habit and finds it convenient to continue it. In the second place, even though money is harder to get now, it is still cheaper to borrow in many cases than to issue stock or bonds.

A large percentage of metalworking loans are short-term with comparatively low interest rates. Many businessmen figure those cost less than bonds with the long-term interest commitments or common stock with its permanent pressure for dividends. In addition, interest on loans is tax deductible; dividends and bond interest in most cases are not.

Full House—Because of this situation, banks have almost all the business they can handle. They are not "beating the bush" for business. One Federal Reserve Bank official said there are many banks which would have to liquidate some current assets in order to grant many more large industrial loans.

Nevertheless, loans are being made at a greater pace than a year ago. A large midwest bank reports that while stock issues during the first seven months of 1953 are down 5 per cent from a like period in 1952, loans, which are in the usual midyear slump, are holding up better than in 1952.

Slight Shift — If there is any shift in the pattern of industrial financing it is a slight move toward insurance company loans. Most insurance companies realized a better-than-average gain over the past two years and must put the increased assets to work. But even this does not always circumvent the banks, which usually have some hand in such transactions.

However, there are some notable cases in which large firms have authorized an increase in stocks. Aluminum Co. of America, at its last board meeting, adopted an amendment which will allow increasing the total number of shares from 7.5 million to 25 million. But Murrin Held, chairman of the Alcoa news bureau, says the main purpose of the action was to make possible issuing stock without delay in case such a move becomes necessary. Alcoa is not planning such a move in the near future.

Securities & Exchange Commission says that of all corporate securities which have been issued from January to May, 1953, most have been for expansion and working capital and not debt retirement.

Just a Ripple—Most financial experts would like to see more venture capital in business today. But they agree that even the expiration of the excess profits tax next Jan. 1 will have only a ripple effect on the financing pattern. One banker believes loans may dip as much as 5 or 6 per cent in early 1954, but he hastens to add that general business conditions will have as much or more to do with it than the demise of the excess profits tax.

Steel Shipments Set Record

The nation's steel mills shipp a record 42,356,861 net tons steel products during the first ha of 1953. The six months' total w about 2.3 million tons above 195 the year with the best previous fi half, and was 10 million tons high than the 32,968,625 tons shipp during the same period of stri torn 1952. Shipments of steel pro ucts during June totaled 6,950,0 tons and also set a record for t month.

Record high deliveries of co rolled sheets, hot-rolled bars a electrolytic tin plate were ma during the half-year. Shipments semifinished forms, rails, plat bars, line pipe and oil country goo were substantially above other cent six-month periods.

Nearly all industries receiv larger tonnages of steel than the similar 1952 months, and t auto industry took 8.1 million to 19.9 per cent of domestic shi ments, to regain its former positi of first place among market clas fications. Household applian manufacturers received 1.1 milli tons and warehouses, which ha shown little monthly change, g 7,789,963 tons.

More steel was shipped in Ju to the ordnance and other milita classifications than in any mon since the end of World War II. Th industrial segment received 304,2 tons in June, bringing its total d liveries for the first six months to 1,393,104 tons.

Peru's Iron Ore Exports Rise

Shipments of high grade ir ore from southern Peru to the U are expected to be increased by t Marcena Mining Co. from the cu rent annual rate of about 1,880,0 tons to 2 million tons by the e of the year.

Marcena, a subsidiary of Ut Construction Co. of San Francis and Cyprus Mining Co., ships t ore from the Bay of San Jua 370 miles southwest of Lima, the east coast of this counti where it is currently purchased the U. S. Steel Corp. Eventua other companies will receive so of the shipments.

At present, Marcena is in third month of shipments.

EXPENDITURES FOR CONSTRUCTION

1953 Outlook

Private	$23,135,000,000
Public	$11,525,000,000
Total	$34,660,000,000

1952

Private	$21,812,000,000
Public	$10,826,000,000
Total	$32,638,000,000

NONFARM DWELLING UNITS STARTED

	1953		1952	
	Private	Public	Private	Public
Jan.	68,200	3,900	61,400	3,500
Feb.	73,800	5,400	74,300	3,400
Mar.	96,100	9,700	91,100	12,800
Apr.	107,400	4,000	97,000	9,200
May	104,200*	2,800	101,000	8,600
June	100,400*	2,600	96,900	6,600
July	95,600*	400	101,100	1,500

*Preliminary

Sources: Department of Commerce, Department of Labor

onstruction Booms Toward Record Outlay

Commerce, Labor departments predict expenditures will hit $34.7 billion. Although the number of units is up for the first half, a softening is indicated in new housing starts

EW CONSTRUCTION expendi-res for 1953 are expected to ach a record $34.7 billion, a 6 r cent increase over last year, partment of Commerce and De-rtment of Labor statistics indi-e.

The high dollar volume will also present a new peak in work ac-ally put in place when adjust-nt is made for price changes.

Both Are Up—Both private and blic construction will share in e increase. Private construction ll hit a record of $23.1 billion d new public construction will ount to $11.5 billion.

The sharpest upturn in the pri-te activity will be in commercial ilding which will increase 45 per nt to a peak of $1.7 billion. Pri-tely owned public utility con-uction is expected to hit an all-ne high of $4.4 billion which will a record in both dollar volume d physical plant installed.

Atomic Plant Boost—New pub- construction this year is expect- to amount to $11.5 billion with out $3 out of every $10 going r direct defense purposes. Pub- industrial construction will ad-nce 15 per cent to a record of arly $1.5 billion as construction gins on the Portsmouth, O., omic energy plant. Highway and hool construction will probably e 10 and 8 per cent, respectively, to set new records in those fields.

The only major types of construction in which expenditure declines are predicted for 1953 are in private industrial construction and farm and hospital building. Although a down trend began in March, private industrial work is expected to amount to $2.2 billion for the year, a figure that will probably be exceeded only by 1952's $2.3 billion.

Slight Unit Decline—Close to 1.1 million dwelling units, both private and public, are expected to be built this year, a slight decline from 1952 when the number was 1,127,000 units.

In spite of the expected decline in the number of units started this year, private construction of dwellings is expected to increase in dollar volume about 5 per cent over 1952 to $11.7 billion. This results from higher prices and the large number of dwellings which were begun in the latter part of 1952 and completed in 1953.

One Up, One Down—During the first seven months of 1953, nonfarm dwelling units totaled 674,500 units compared with 668,400 in 1952. Private housing is up 22,000 units to 645,700 and public dwellings are down 16,800 to 28,000.

Commerce and Labor department officials base their predictions on relatively firm estimates of work already completed during the period, on documented information about work under contract to continue or be completed and on the assumption that only mild readjustments to the general economy will take place in the second half of the year. They expect no major effect on construction from the Korean truce.

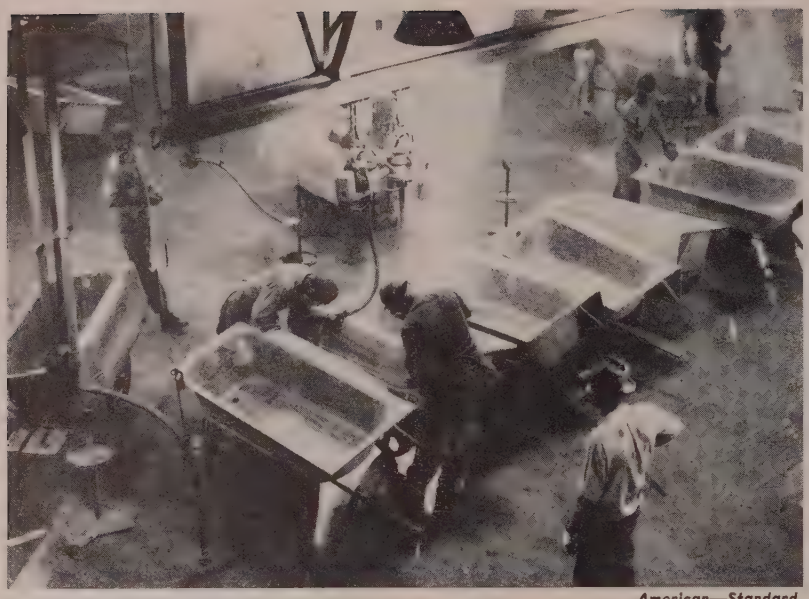
Canadian Auto Sales Soar

Spending by Canadians for motor vehicles has risen nearly $700 million during the first half of this year, compared with the same period in 1952.

This outlay amounted to an increase of 28 per cent, according to the Dominion Bureau of Statistics. In terms of automobile and truck sales, it meant that 274,039 units, with a value of $687,883,412, were sold in the first six months, as against 216,566 vehicles, worth $538,433,773, in the corresponding 1952 period.

Consumer Credit Not Excessive

"On a nation-wide basis average down payments on installment sales still remain above 20 per cent on durable goods," the National Foundation for Consumer Credit says. Even in emergency cases "not one installment sale out of 100 has a no down payment provision." Moreover, though "the foundation does not condone imprudent advertising of credit terms, it is obvious that advertising is written to awaken consumer interest."



American—Standard

Workmen grind tubs smooth for enameling as . . .

Fixture Sales Plans Speed Up

Decline in new home building plus strong competition causes fixture makers to reshape sales programs. More emphasis is to be placed on replacement market

LOCKED BATHROOM ever cause you to wish you had another on the first floor or perhaps in the basement? Plumbing fixture makers hope you've experienced this desire because it's one of the pitches they'll be using next year to bolster sales against an expected decline.

Sales aren't particularly bad right now. Most of the leaders in the field report that fixtures sales are running well, and the total 1953 volume should have no trouble equaling last year's $261-million mark.

The Reason Why—But two factors are causing the industry to think about reshaping its general sales program and to reach further into the till for more advertising expenses: The decline of new home starts—their biggest market—and competition.

Bit of a Tip—New home construction in the country has run well over 1 million homes in each of the past four years. Now the construction curve has apparently begun to dip downward.

Latest official figures showed the first April-to-May decline in new home starts since the war. Earlier in the year practically all contractors were optimistic about the prospects of 1953 beating last year's 1.1 million starts. Some have changed their minds.

No More Sight-Unseen Deals—Many builders have trimmed their 1953 schedules and state that if they equal last year's business they'll be happy. This is particularly true in the over-$18,000 class of homes. There is still an active market in the homes selling for less than $14,000, but contractors report that new homes are standing longer before they are sold. This is quite a contrast to recent years when many homes were sold almost before the lumber had been unloaded from the truck.

And this is where the two-bathroom pitch comes in. With the decline in new home construction, the industry is stressing the desirability of two bathrooms in every new home and where possible in all homes being remodeled.

More emphasis, too, will be placed on the replacement market which has been a bit neglected in recent years by the entire construction industry. The volume for home repair and modernization work has reached $6 billion annually and the National Association of Real Estate Boards expects it to hit $12 billion within the next seven years.

Tough Jobs Last—The emphasis will be reflected right down the line in plumbing fixtures to the installing plumber. He has been happier taking the new home jobs because they are easier than the replacement work where old fixtures must be removed first. He'll need replacement work to keep working full time.

Leaders in the industry today estimate that between 65 and 75 per cent of the fixtures are going into new homes and the remainder to replacement. In 1940 the ratio was about 50-50 and John Madden, president, James B. Clow & Sons, Chicago, states that he expects this ratio to return in the next two years.

Retail Level, Too—Officials of the American Radiator & Standard Sanitary Corp., Pittsburgh, state that they are not only running more advertisng in "popular" magazines (Life, etc.), but they are setting up 7000-8000 promotional displays for retail stores.

Practically all of the fixture leaders state that competition is strong and getting stronger. "Smaller manufacturers enter the business and step up production," said one maker. "Then they cut prices and we have to follow. The wholesale jobber—who handles most of the sales for the industry—is the one who gets the squeeze."

Most of the competition is in the steel and nonferrous fixture field rather than in the more expensive cast iron equipment.

So, with metal shortages a thing of the past in the industry, plumbing fixture makers will be out to clean up in sales—with two bathrooms the goal for every home.

Mineral Order 8 Revoked

Mineral Order 8 on molybdenum concentrates has been revoked by the Defense Materials Procurement Agency, but the revocation does not eliminate obligations or liabilities incurred under the order

Heavy Pull Ahead for Congressmen

The more important issues include overhauling the tax system, St. Lawrence Seaway and power question, foreign trade policy and extension of renegotiation

CONGRESSMEN WILL have to hustle next session to pull their way from under the heavy legislative load on tap for them in time to do much path-pounding for the 1954 elections.

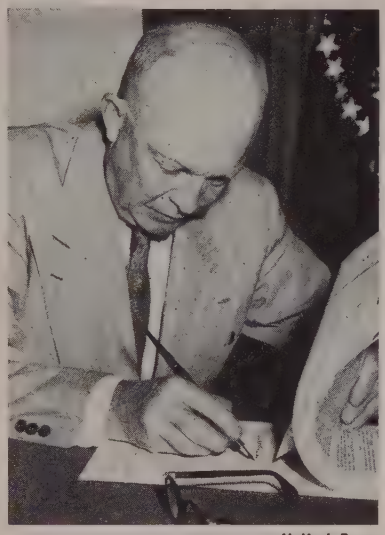
Congressional action during the session will also provide the pegs upon which the campaigns will be hung.

On the Agenda—The workload for the coming session which takes up in January includes six requests which President Eisenhower made last session and got no action on. These are the extension of social security coverage, amendments to the Immigration Act, repeal of the Apr. 1, 1954, scheduled reduction in excise taxes, repeal of the Apr. 1954, scheduled reduction in corporate income taxes and an increase in the District of Columbia commissioners from 3 to 5.

Adding to the legislative load and putting more spice into the election pot will be such topics for Congress to handle as the overhauling of the tax system, the St. Lawrence Seaway and power question, Hawaiian and Alaskan statehood, aid to shipbuilding and highway construction, extension of renegotiation, revamping of the foreign trade policy, redrafting of the farm price support law and formulation of federal policy of resource development and conservation.

Batting Average: .727 — One of the big tests will be President Eisenhower's ability to carry through his programs, particularly in his government economizing. His batting average last session was excellent—32 out of 44 requests approved and only three flatly rejected, the most important being the refusal to raise the debt ceiling. There seems to be only one other time when a Presidential record was better and that was Franklin D. Roosevelt's first term when the nation was in the throes of depression.

The President's power is not the only test which lies ahead. GOP leadership in the House will be at stake in the election and that thought will enter in the handling of the highly controversial legislation coming up.



United Press

DWIGHT D. EISENHOWER
. . . fast start in a rough race

Air Force Consolidates Buying

The seven subordinate headquarters of the Air Materiel Command, scheduled to be eliminated before Dec. 31, 1953, will have their functions transferred to the eight Air Materiel Area offices.

Six of the units to be closed are Air Procurement District headquarters. They administered the 14,000 Air Force contracts with industry and are presently located in New York, Chicago, Boston, Detroit, Los Angeles and Ft. Worth, Tex. The seventh is the Air Materiel Area headquarters at Olmstead Air Force Base, Middletown, Pa. It will be consolidated, along with the base office and the Middletown Depot organization, into the Middletown AMA headquarters.

The office space leased by the six APD headquarters will either be terminated or turned over to the General Services Administration. The reorganization also eliminated three Air Regional offices. These were located at Glendale, Calif., South Bend, Ind., and Minneapolis.

Excise Tax Fight Pledged

Joining in the fight against injurious excise taxes, the Commerce department is preparing recommendations to be submitted to the House Ways & Means Committee. In a speech to the Retail Jewelers Association, Commerce Secretary Sinclair Weeks declared, "The whole system is antiquated, cockeyed and soaks small business . . . the laws under which they are enforced lead to improper discrimination among consumers and inflict hardships on many industries." The whole excise tax system, he said, must be thoroughly overhauled.

Government Best-Seller

The federal government's best seller—"United States Government Organization Manual"—is available in the new 1953-4 edition at $1 from the Superintendent of Documents, Government Printing Office, Washington 25, D. C. It lists all government departments and agencies, explains their functions and contains names and titles of approximately 3500 key government officials.

National Steel Council Coming

Plans for the formation of a National Steel Council in the Commerce department continue under study and in their present form call for representation from the producing side of the iron and steel industry.

Under consideration in addition to the basic steel industry itself are casting and forging producers, warehouse distributors, pig iron producers, structural steel fabricators and important raw material and suppliers groups. Consuming industries will not be represented on the council since this would create an unwieldy body. Such representation is not needed anyway, inasmuch as all important producing industries will be taken care of in their own industry divisions.

Windows of Washington

By E. C. KREUTZBERG *Washington Editor*

New National Issues Committee sets sights on 1954 election. Headed by Mrs. Eleanor Roosevelt, members will seek return of New Deal to Congress ranks

BUSINESSMEN SATISFIED with the current trend of administration decontrol will do well to watch the tactics of the new National Issues Committee announced by Mrs. Eleanor Roosevelt. Setting its sights on the 1954 election, the group will seek by "educating the public" to return to congress men of the former Roosevelt New Deal faction.

The new committee describes itself as "liberal." Its list of members is comprised largely of former officeholders who are unhappy under the Eisenhower administration's policies and would like a return—not to the Fair Deal of Truman, but to the New Deal of Franklin D. Roosevelt. Some of the more notable members are Arthur J. Altmeyer, Charles F. Brannan, Oscar Chapman, Clark M. Clifford, Frank Graham, Leon H. Keyserling, James G. Patton, Murray Lincoln, Walter Reuther, Alan Barth, Mary McLeod Bethune, Mary M. Condon, Morris L. Cooke, Robert R. Nathan, A. J. Hayes, Philip Klutznick, Emil Rieve, Harry W. Schacter, Stephen J. Spingarn and Telford Taylor.

Fight for Liberalism—Mrs. Roosevelt's statement declared that "the much-maligned economic planners of abundance seem to have been replaced by the planners of scarcity," and the National Issues Committee is not going to take this lying down. It will "get the full facts and information down on the level of the people." Dissatisfaction with the present trend dates back four to five years, she said, when, in the Truman administration, "it began to be impossible to get congressional support for the kind of liberal program necessary for this country."

What's a liberal? Mrs. Roosevelt thoughtfully defined him as "a person who is willing to look at a subject from both sides, and realize that one is in a changing world—and he wants to move forward, accept change and if possible preserve the best in the past. But always be willing to go on to new concepts."

Power-Packed—As indicated by the above list of names, Mrs. Roosevelt's new group has potentialities for making a lot of political noise; it has a big following in the country. Given untoward developments—as a possible business recession late this year or next—it could exert a powerful influence on 1954 elections.

Low-shaft Furnace Study . . .

Of fundamental importance is a research project launched by the Bureau of Mines on utilization of low-shaft blast furnaces.

On the basis of European data, there may be a substantial place for such units here for economic production of pig iron in much smaller quantities with the use of low-grade fuels than is turned out by today's conventional large-tonnage unit. The low-shaft stack may be adaptable to areas having small deposits of iron ore, a source of low-grade fuel and limited pig iron requirements. Some consumers, as foundries and nonintegrated steelmakers, might want to install low-shaft furnaces to produce pig iron for their own use.

The bureau will conduct this program at the small blast furnace it erected at Pittsburgh in connection with its manganese-from-slag research.

SBA Regulations Due Soon . . .

Regulations under which business loans will be approved by the new Small Business Administration now are being discussed in daily conference of the agency's loan committee.

They will be announced well before the expiration of the Reconstruction Finance Corp.'s loaning authority on Sept. 28. Stress is being placed on encouraging bank loans with government guarantees and on bank participation in direct loans. This is necessary inasmuch as Congress allowed SBA a revolving fund of only $55 million. Small companies needing financial assistance are advised to maintain contact with SBA field offices which will receive the regulations as soon as they are promulgated.

United Press

Mrs. Pat Pending

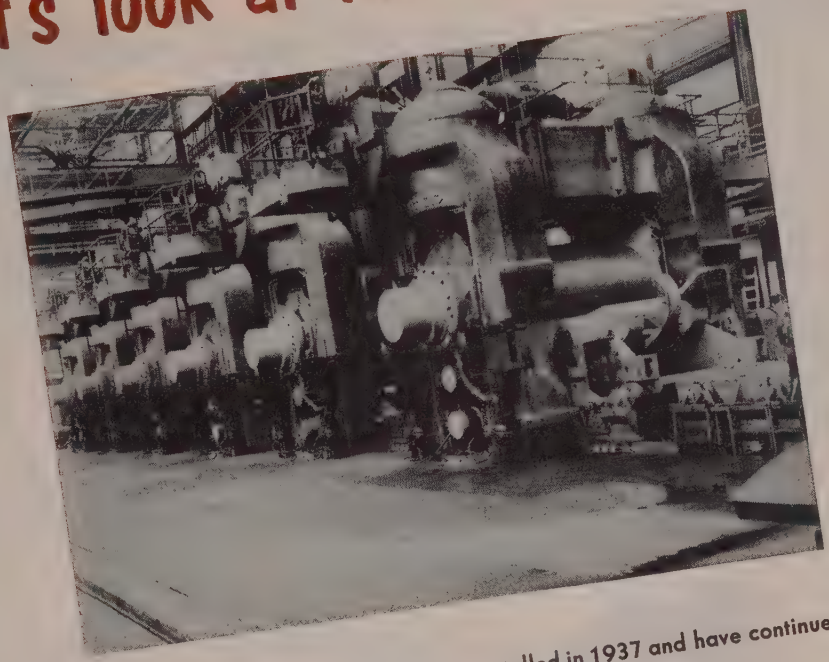
Mrs. Robert W. Leeds of Martinsville, Ill., appointed assistant commissioner of patents, is the first woman to hold the post in Patent Office history.

Lead, Zinc Hearings Set . . .

To obtain information on the impact on the domestic mining industry of imports of lead and zinc the Tariff Commission has scheduled hearings for Nov. 5 and 7.

The commission, in response to requests of the House Ways & Means Committee and the Senate Finance Committee, must file a report of findings by next March. In recent hearings of the House Small Business Committee, mine operators said that in 1952 the United States needed only 225,000 tons of zinc from foreign countries but that actually 565,000 tons had been imported; the result was that the zinc price dropped 41 per cent below the ceiling price established under price controls.

"let's look at the record . . ."



THIS picture shows Morgoil Bearings in operation in the four high hot strip mill at Corrigan-McKinney Works, Republic Steel Corp., Cleveland, Ohio. They were installed in 1937 and have continued to give outstanding service.

The reasons why Morgoils perform so efficiently stem from the simplicity of their design, their accuracy of manufacture and the basic conception that a bearing operating on a film of oil offers tremendous advantages from a load-carrying and wear standpoint.

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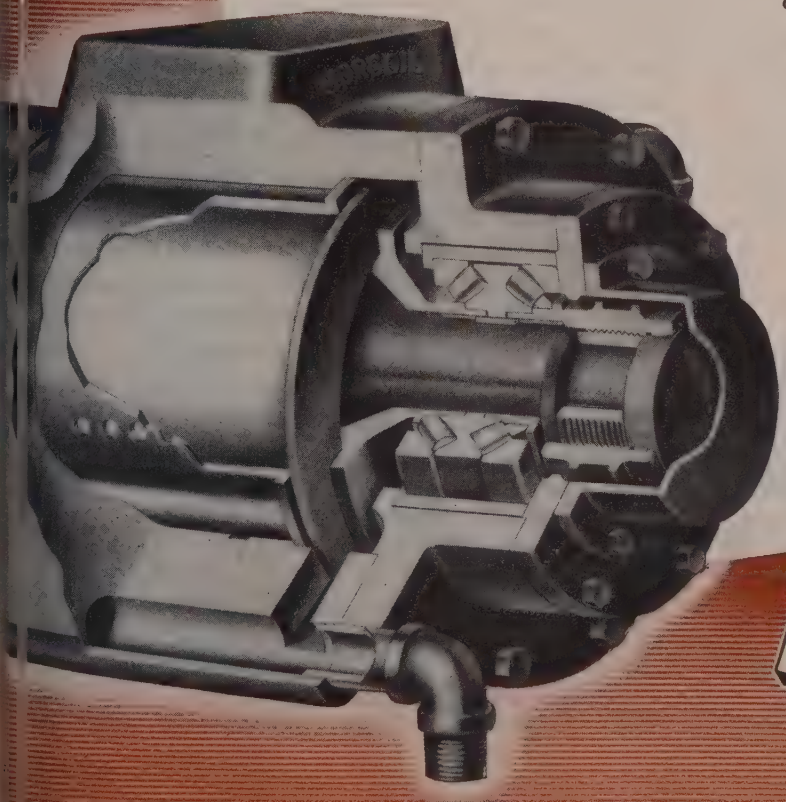

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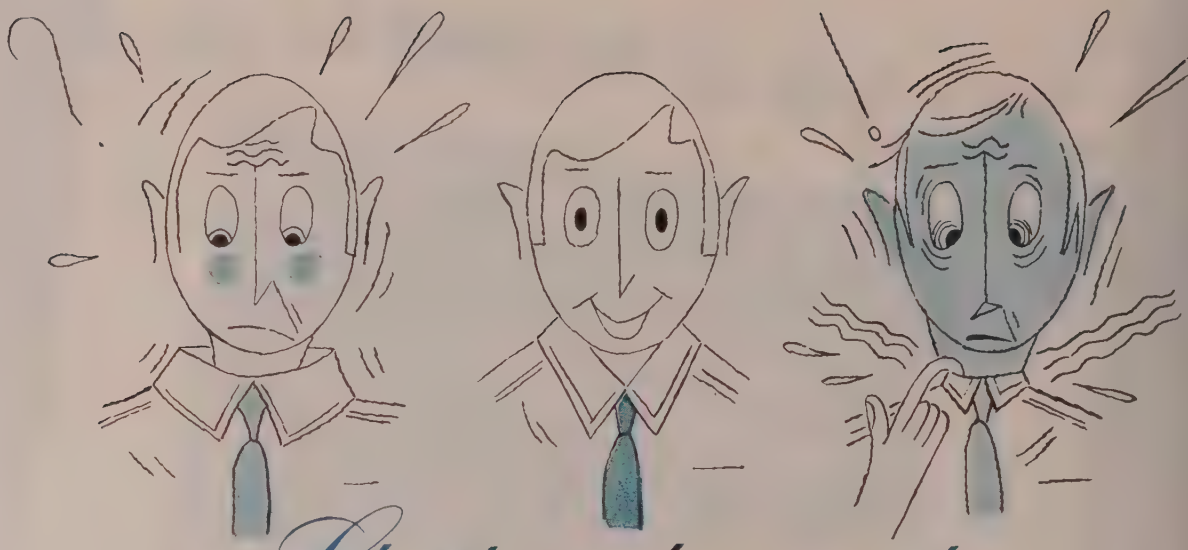

Like the right size shirt

CMP THINSTEEL

is tailored to your need

Buying steel is very much like buying a shirt—you prefer to buy the steel or the shirt that EXACTLY fits your requirements. True, any item made to fit a particular need may cost a little more than a product offered for all-purpose useage; but the first cost, particularly the "first steel cost", may be relatively unimportant. The end-product cost is the important consideration. If cold rolled strip or spring steel is involved in fabriaction of component parts for your end-products, and the labor cost for fabricating and assembling those component parts is an important part of your total cost, you'll want to investigate CMP strip products.

CMP strip can be made to fit the most exacting needs, whether it be in terms of close tolerances, uniformity of structure, temper, finish or physical properties. The use of specially prepared CMP strip made to the measure of a particular processing or end-product requirement is contributing to lower total costs for many manufacturers. We'll welcome the opportunity to "try CMP strip for size" in your fabricating or assembly operations. Don't compromise steel quality for first steel cost.

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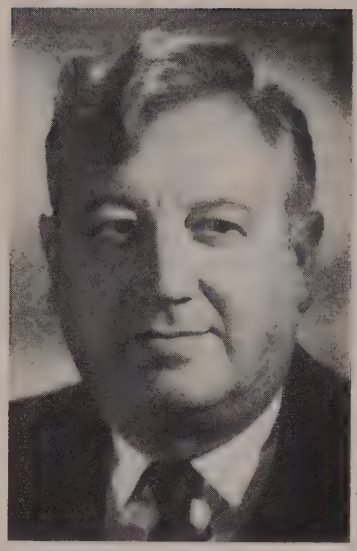
Your Key to Good Plant Discipline: The Foremen

Train them in the proper approach to the problem and the result can mean better work, less employee turnover

By ARTHUR C. CROFT
President
National Foremen's Institute
New London, Conn.



ENALTIES ARE BITTER medi-ne—hard to take and often ubly hard to administer.

There is no uniform prescription fit all violations, which range om petty infractions to chronic subordination. To make matters rse for management, the un-lcome dosage is applied by oxy, so to speak. Foreman Jones y get good results with sugar-ated pills of man-to-man advice, ile Supervisor Smith regards gery as the best way out. He es, demotes and separates at the p of a hat.

Costly Errors—When a penalty too severe, management may p the consequence in terms of ered quality, rising accident es, increased turnover, slow-vns and even strikes. Almost ry day, our institute records w, arbitrators handle grievances ed on workers' convictions that were taken to task unfairly a real or alleged violation of rules.

lmost 40 per cent involve sus-sion or layoffs which the em-ees or their unions deemed arranted. Here is a still more significant statistic: In over 70 per cent of the cases involving discipline, the arbitrators either reversed or modified the supervisor's verdict.

Yardstick Needed—Many cases would never reach "court" if foremen and management employed the yardstick which arbitrators follow in upholding or disallowing the company. In the realm of discipline, most arbitrators subscribe to four basic principles:

1. Do the employees really know the plant rules? This raises related questions: Did management post the plant regulations? Was the worker absent when a new rule came into effect? Was the rule communicated to him in a way he could understand?

2. Is there a systematic schedule of penalties for infraction of rules, and are employees familiar with them? For example, if smoking in a certain area is a dischargeable offense, even on the first violation, are the workers aware of this?

3. Is the penalty imposed on a worker consistent with past enforcement? There should be no inequity in handing out penalties. The foreman who warns one worker and suspends another for the same offense only undermines the whole system of discipline.

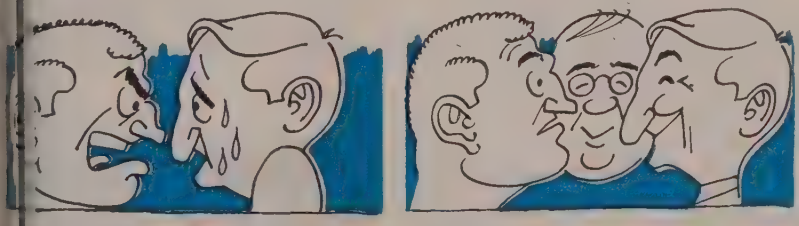
4. Are there special considerations which justify the foreman in imposing an unusually harsh penalty or which justify the employee in expecting leniency? For the former case, arbitrators are interested in the worker's past record—were there any previous instances of insubordination? In the latter case, arbitrators would inquire into the circumstances surrounding the worker's behavior—was he under a strain of a personal nature, such as sickness or death in his family?

Rules for Foremen—Many firms have learned from experience that the following simple rules will help the foreman act effectively.

1. Give a warning only after a first offense. Unless company policy provides otherwise, a reprimand should be sufficient. Next time, tighten up. Be sure, however, that repeated warnings lead to positive action. Otherwise they will mean little or nothing to workers.

2. Take action promptly when a warning is disregarded. Penalties should be meted out when a worker has disregarded warnings and abused the company's physical property, acted dishonestly, refused to co-operate or repeatedly violated the dictates of common sense.

3. Remember, there are many kinds of disciplinary action—not just one. Make the punishment

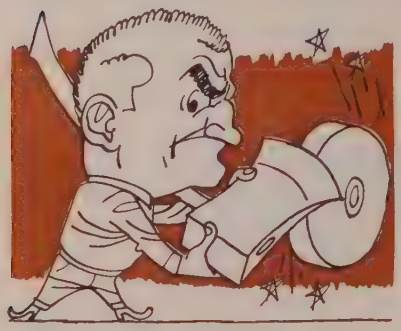


In many cases of discipline . . . arbitrators reverse verdicts

fit the offense. Various degrees or grades of penalty range from initial reprimand to outright discharge. They include reporting to a higher authority, transferring to a less desirable job, withholding a promotion, placing on probation, switching to day work from incentive and time off without pay.

4. Never fire a worker until all other possibilities are exhausted. It takes courage to fire a man, but it takes even more to stick it out and save him by overcoming the problem. Balancing the good against the bad may point the way out of an otherwise hopeless situation.

The Key Man—The foreman is the key disciplinary authority. He



Avoid unusually harsh penalties

decides when and what discipline should be meted out. Few men are able at all times to say and do the right thing. Hence foremen have to be trained before they can enforce company rules with fairness and tact.

Making rules is one thing; properly enforcing them another. Here is how one company which has made strides toward setting up an effective policy has assisted its foremen.

Work-Sheets Help—The company issues action work-sheets to its supervisors. Before he disciplines an employee, the foreman fills out a work-sheet. This prevents him from taking action on the spot. The supervisor is required to write down the facts that warrant penalties. He must also list any facts that support leniency. The very act of writing makes the foreman consider both sides of the situation. This "cooling off" period minimizes emotion and gives him time to mull over his decision.

Once the decision is made and the work-sheet is filled out, another member of management has to go over it and agree or disagree with the recommendations. This not only puts management squarely behind the foreman, it also assures any eventual arbitrator that the decision was not made in haste and received the careful attention of management.

Checklist, Too — Another company issues discharge checklists to its foremen as aids in making just decisions involving the possible dismissal of employees. The list can be revised to fit conditions in other firms. It is useful in putting the brakes on impulsiveness and will go a long way toward eliminating the embarrassment, the hemming and hawing, or the emotional extravagance that so often makes firing a worker such an unpleasant affair. The following questions are included in the list:

1. Have you all the facts? Was there a good reason for the individual's action? Sickness? Death in family? Money trouble?

2. Has the individual had a fair chance to improve? Has he had some help, advice or explanation? Does he know what is expected of him? Did he know the rules?

3. When was the individual given fair warning of the seriousness of his action? Was a record made and filed? Who gave the warning?

4. What action was taken in other similar cases? In the same department? In other departments?

5. What will be the effect of the action on the group? On the groups in other departments?

6. Are you going to handle this yourself? Do you need help or further information? Should you check with your supervisor? The personnel department? How is your timing?

7. What other possible actions are there? Will your action help the organization, production or the man? Should he be suspended?

8. Are there others in the department who had different treatment under similar circumstances?

9. Is the individual reasonably satisfied he was treated fairly? Should you suggest that if not, he can see higher supervision of the personnel department?

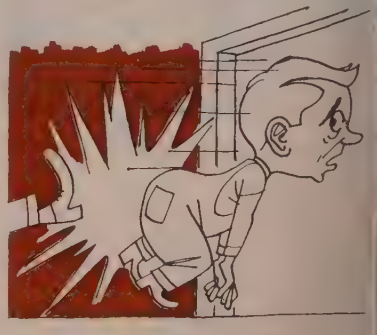
Right and Wrong—Case histories from the institute's files illustrate the right and the wrong approach to the use of discharges as penalties. Here are two examples of how different foremen acted when confronted with infractions of their companies concerning gambling on the premises:

The Case for Mr. A—Foreman A fired two of his men for an alleged violation of a company rule against gambling on the firm's time and property. He took this action after one of the two men had accused the other of not paying up on the bet.

The foreman investigated and learned that betting on company time and property was becoming widespread. He also discovered that the man who had reneged on a payoff was generally known to maintain regular contacts with a bookmaker when he had bets from workers. The foreman found that none of the men would admit to placing bets for the obvious reason that they didn't want to implicate themselves. "That's why I felt it wouldn't hurt to set an example and to clean things up," he reasoned.

The workers protested their firing and an arbitrator ruled that the foreman had no evidence that the rule against gambling had in fact been violated. All the foreman should have done under the circumstances, he declared, was to call attention to the "no gambling" rule and guard against violations in the future. The two were reinstated.

The Case for Mr. B—Foreman B, in another plant with a similar no-gambling - on - company - property-or-time rule, acted quite differently when he encountered an infraction. This is how he de-



Fired . . .

scribed his particular situation: "A bunch of my men started shooting crap in the dressing room at quitting time. I heard about it. I talked to a few of them, told them it was against the rules and warned them to stop before it caused trouble. This did not stop gambling. I then made it a point to walk in and catch them. I told them that I needed every one of them in my department and that they were all too good to lose. But I also told them that if I heard of any more gambling, I would have to let them go. I haven't been bothered since."

It Paid Dividends—Foreman B got results from his sensible, reasoned approach, while Foreman A lost out by "making an example" through a penalty that failed to stick.

Such case studies are practical working tools for teaching first-level supervision how to handle everyday human relations problems. The National Foremen's Institute compiles a feature known as the "Scrapbook for Supervision," which appears from time to time in the monthly *Employee Relations Bulletin*. The scrapbook employs the case approach in explaining how arbitrators have ruled in the past.

A number of companies have reported that they reproduce the feature and distribute copies to their foremen. A sample copy of this material will be mailed free to readers on request. Here are some typical "scrapbook" cases.

Case of Repeated Reprimands—Dorn and Brown were given disciplinary layoffs of 6 hours and 21 hours, respectively. Cowen, with an absentee record equally as bad as the other two, was reprimanded and placed on thirty days' probation. Dorn and Brown protested their penalties on the basis of discrimination.

Arbitrator's award: The claims of Dorn and Brown are denied.

While Cowen may have been shown special leniency or favoritism, that was a far cry from a charge of discrimination against Dorn and Brown. Dorn had been warned about her absenteeism on four previous occasions, Brown on seven previous occasions, while Cowen has been warned on only one previous occasion.

Case of Loud-Mouth Louie — Louie Smith, upon being given a two-week disciplinary layoff, returned to his department and engaged in an argument with his foreman. For so doing he was given a three-week layoff.

Arbitator's award: Smith is clearly rather difficult. He is an excitable man, and, as he puts it, naturally speaks in a loud voice. He is apparently not malicious or ill-intentioned, but he is rather obstinate and confident of his own worth. Such characteristics should be taken into account and allowed for. On the other hand, Smith should attempt to control his voice and his temper. He can hardly expect these characteristics to procure him preferential treatment.

It seems to be equally clear that Smith was dealt with too harshly. My award is that Smith be compensated for his layoff.

While the arbitrator says the employee cannot expect "preferential treatment" because of his characteristics, he nevertheless received such treatment, at least from the arbitrator. What was actually meant in the decision was that Smith should change his manner because he was dealt with more harshly because of it and thereby created additional trouble for himself.

Case of the Unturned Cheek—Gordon was approached by his foreman with a request to return to his job. An argument ensued and Gordon stated he had a notion to beat the foreman, who took off his glasses and said, "Maybe you are big enough and maybe you're not." Gordon thought he was big enough and was discharged for the assault.

Arbitrator's award: To be sure, a foreman, no more than a worker, cannot be expected to be a saint and to turn the other cheek. But when a worker is guilty of misconduct, it is the foreman's obligation to make a reasonable effort not to egg the worker on into further and more serious misconduct. Here, after Gordon's abusive and improper language, the foreman accepted the challenge and acted in a manner which reasonably appeared to be an invitation to fight. Gordon is reinstated without back pay.

Case of Careless Cal — Cal Evans had been on a new job for three days. He walked away from his machine while it was running and during his absence it stuck, causing considerable damage. He was discharged for careless destruction of company property.

The case of Loud Mouth Louie

Arbitrator's award: It is conceded that Evans did not act maliciously or with any other bad intention. But it is conceded also that he was a competent worker during his substantial period of employment with the company and that this was his first offense. He is reinstated but not with his back pay.

And Others—Other scrap book case topics include: "The Missing Fans," "The Rugged Individualist," "Goldbricking Employees" and "The Dirty Name."

These suggested aids and cases for foreman instruction have proven invaluable to companies throughout the nation. They could form the basis for a program in your plant.

Remember this, good supervisory behavior toward employees doesn't come easily, but it can be taught and communicated until it becomes a habit.

and reinstated

When competition gets tough—when buyers compare *quality* as well as price—"Hyatt-equipped" is a recognized guide to top value! That's because business men know that *Hyatt* bearings are *better* bearings—performance-proved to last longer at peak efficiency! And they know also that Hyatt bearings are a reliable indication of *extra quality, longer life,* and *lower maintenance costs* in any product they buy or sell! For cylindrical or spherical roller bearings, HYATT is the name to remember! *"If it's built with Hyatts, it's built to be the best!"*
Hyatt Bearings Division, General Motors Corporation, Harrison, N. J.

HYATT ROLLER BEARINGS

y FLOYD G. LAWRENCE *Detroit Editor*

Mirrors of Motordom

Applying sealer to understructure

2. Bus floorboards are installed early

3. Roof panels go into aluminum body

ABOVE: Early steps in GM PD-4104 intercity bus assembly at GMC Truck & Coach Division in Pontiac, Mich.

Construction of aluminum bus bodies is unique in the automotive industry. Techniques are more similar to aircraft than autobuilding

DETROIT

HINGS ARE NOT entirely con-entional at GMC Truck & Coach ivision of General Motors Corp. -vehicles come down through final ssembly frontwards, backwards nd sideways.

The labor situation, of course, is ot what it should be. Skilled help very hard to get. But that has tle to do with frontwards, backards and sideways production at MC. Their engineers, who practically never touch a drop when ey're working, planned it that ay, and the vehicles are on separate assembly lines.

Sideways for Busses—Omitting vilian trucks which come off the nes frontwards and military ucks which come off the line ckwards, remaining is coach proiction which can be passed by out as easily as a Greyhound is parked crossways on a one ay bridge. For appropriately enough, that is the way they come off the GMC bus assembly line.

Assembly of a bus starts around the air suspension ride. At the first station two bulkheads and air beams are assembled to make the rear portion of the underbody. At the next station two front bulkheads and air beams are assembled to make the forward portion of the underbody. At the third station the lower or baggage compartment floor is built up, and at the fourth station, on a jig about 40 feet long, the front, rear and center of the underbody meet and are joined.

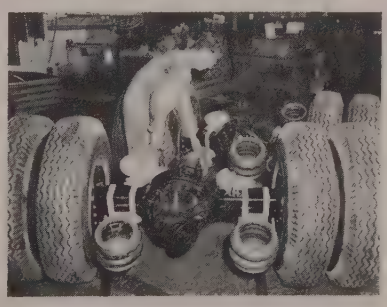
Step by Step—At the next station the wheel housings and top of the underbody which is the floor of the passenger compartment are added, and finally the familiar rippled aluminum siding extending up about a foot above the floor of the passenger compartment is added. Up to this point the underbody has been moving from station to station backwards and the reasons now become evident.

At the end of another line which meets the underbody at a central mating jig is the top of the bus. Its history has been much the same as that of the underbody. First to be constructed was the rear end of the roof. This section was then positioned in a jig down in a pit so that workers could handle roof sections without bending over when adding them to the rear section. At the next station which is the main roof pit bows, window channels and roof panels were added and spot riveted. At succeeding stations panels were fully riveted, a sound deadener similar to undercoating was sprayed on the interior with insulation and masonite paneling added.

Space Saver—With the underbody moving backward and the top moving forward toward a central point, they meet heading the same

BELOW: Late assembly stages. Engine is a six-cylinder two-cycle diesel

Front end section meets body shell



5. Air bellows replace metal springs

6. GM diesel nestles snugly in rear

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direction, eliminating the need for space to turn one of the 40-foot sections around. When the roof and the underbody have been joined and a front section which has come down a short line of its own is added, the aluminum shell is recognizably a bus and starts down another line to the right of the underbody line.

It might be well at this piont to move back and pick up a number of important details that have been omitted for continuity. As in building aircraft, the work does not actually take place on a moving assembly line. Each unit is allocated two hours at each station and all shift to the next station together in a sort of musical-chairs arrangement. Movement from one station to the next is accomplished through electric hoists mounted on rails passing over the stations.

Like Aircraft Assembly—It can readily be seen that careful analysis of what can be done in two hours is required to keep the operation flowing smoothly and, coupled with the sequence of assembly requisite to the job, the whole thing adds up to a dilly of a work-flow problem. In this regard, each work station is supplied by a number of subassembly stations strikingly similar to aircraft assembly practice. Thus the bulkheads referred to at station one already have stiffeners, flanges and some electrical components attached before they are placed in the work station jig for attachment to the air beams which join them. The work flow is much like the veins of a leaf with the final product coming out of the stem.

To keep this sort of an operation flowing smoothly, two additional factors are involved which have not been touched upon. One is that jigs must be right. The same locating point may pass over more than a dozen jigs at successive stations and in each case the location must be right so that assemblies being added on will fit.

The Part of Parts—A second problem is that adequate but not tremendous quantities of parts must be in storage at each work point where they are needed. For each assembly point has its individual inventory of parts, and assembling in most cases only one unit every two hours the quantity does not have to be great. Solving this problem is the bailiwick of the stamping department.

The majority of bus body parts are aluminum stampings ranging in thickness from 0.375 inch to 0.030 inch. In most cases they include a large area with one part almost 12 feet long. To make this part an upside down press with a bed 102 by 144 inches and 36-inch stroke of 2000 tons is used. The nuisance is that the press can run perhaps only 500 parts or less at a crack and then the die must be changed as it runs the next part scheduled for replenishment. No one has come forward thus far with a quick-change die to help eliminate this die-changing problem.

Looks Like a Bus—Returning to our bus at the point where the body shell is relatively complete, you'll see that the assembly now looks like a bus, tending to make succeeding operations less dramatic. Ingenuity is evident none-the-less. Putting the wheel and axle assemblies on is a case in point.

With the conventional car or truck, the body is dropped onto a chassis supporting the axles. In the case of a bus, the chassis is already built into the bus body. To install the wheels and axles a pit is utilized into which the assemblies are lowered before the body arrives. They are then raised into position hydraulically, bolted on and the bus leaves its jig-to-jig existence to move forward every two hours on a conveyor until fabrication is relatively complete.

Twelve a Day—With all basic structural fabrication complete, leaving seats, glass, etc., yet to be installed, the bus arrives at a turntable where the transit or city busses merge. The ratio of production is three transit or city busses to each parlor or interurban bus giving a total production of 12 busses a day. From the turntable the busses are picked up by the conveyor which carries them sideways down the paint, glass and trim line.

Movable spray booths about 10 feet wide travel down the two sides of the bus. Each has a platform which may be raised and lowered and a water curtain which is built into the unit. It does not take two men working with spray guns long to paint a bus, and the body then moves into a drying oven after each paint station to dry the paint so that the next coat may be added in a matter of minutes. One customer requests five different colors on the exteriors of his busses so the need for quick drying for additional coats can be readily appreciated.

The Customer's Right—This catering to the foibles of customers is one of the many unique factors in the bus business. Largely responsible is competition for the coach market, and where competition is keen and volume is low the customer has a greater chance of being right.

Thus, virtually every bus is a custom job. The customer gets what he wants. And no wonder. He buys units worth more than $20,000 in many cases.

Low Volume—Busmakers figure their market is about 5000-6000 units a year and that it is relatively fixed to replacement production. That means customer satisfaction for repeat business, and that's the policy at GMC. Many parts must be ordered specially for a given job and can delay production for as much at three to six months.

But the folks at GMC aren't in a hurry. They know as long as the customer is happy another bus will be coming down the line in another 40 minutes.

Auto, Truck Output

U. S. and Canada

	1953	1952
January	612,815	424,559
February	623,793	464,577
March	752,474	525,024
April	782,453	570,464
May	685,390	542,559
June	713,206	542,479
July	756,543	226,134
August		322,755
September		595,715
October		656,767
November		548,782
December		569,715
Total		5,989,509

Week Ended	1953	1952
July 18	175,555	32,468
July 25	172,874	42,514
Aug. 1	168,267	22,181
Aug. 8	137,671	43,964
Aug. 15	155,179	36,890
Aug. 22	146,000*	109,588

Sources: Ward's Automotive Reports. *Estimated by STEEL

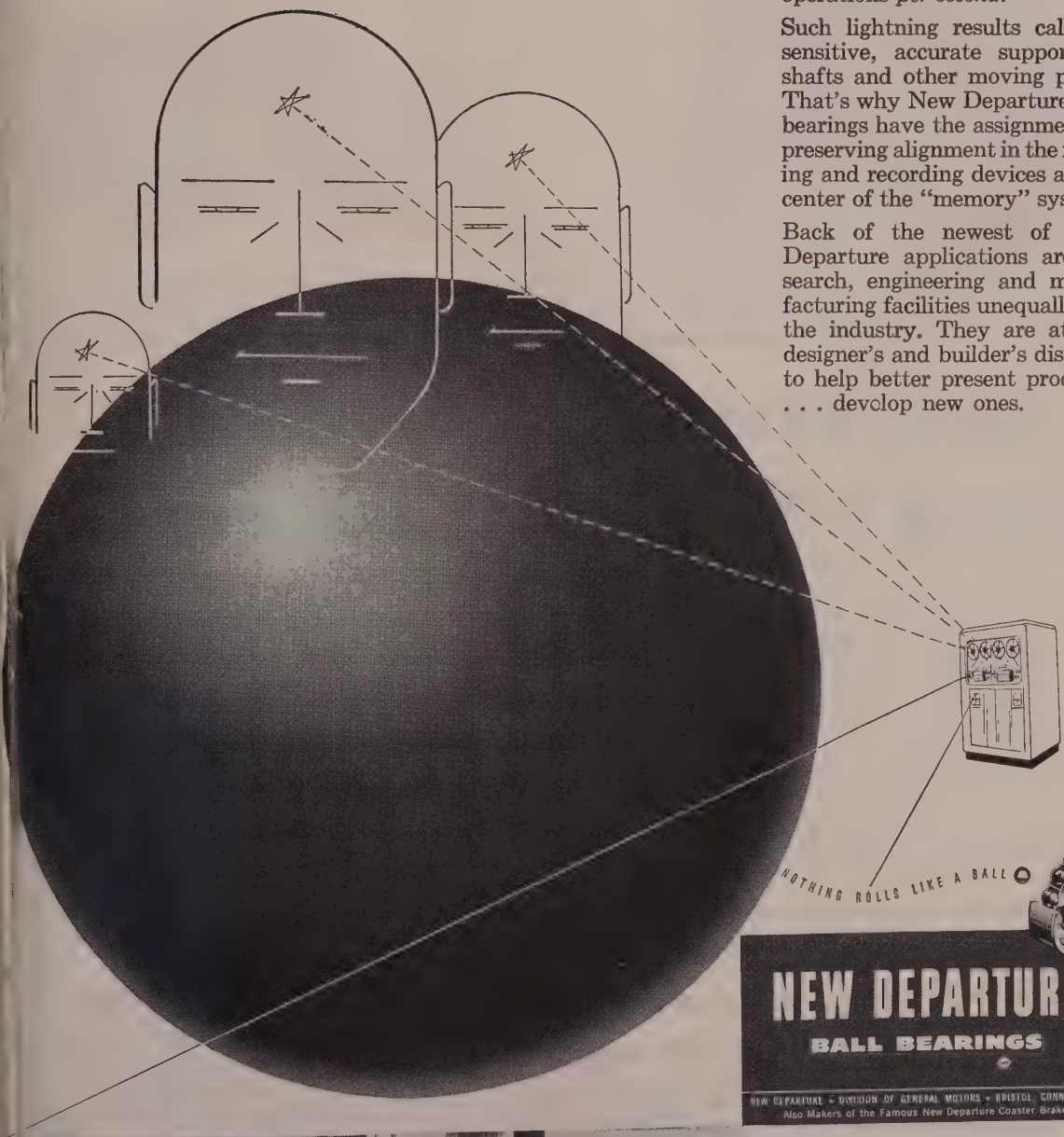
The BRAIN . . .

has an No degree

One man, using a desk calculator, would work seven years on the problem this IBM "701" electronic computer solves in just a *few minutes!* In fact, this "brain" averages 14,000 mathematical operations *per second!*

Such lightning results call for sensitive, accurate support of shafts and other moving parts. That's why New Departure ball bearings have the assignment of preserving alignment in the reading and recording devices at the center of the "memory" system.

Back of the newest of New Departure applications are research, engineering and manufacturing facilities unequalled in the industry. They are at the designer's and builder's disposal to help better present products . . . develop new ones.



International Business Machines' new "701" electronic computer employs New Departure ball bearings for mounting the magnetic drum rotors, as well as the magnetic clutches of its tape readers and recorders. All units of the calculator are shown at left.

AUGUST 24

AUGUST 25

Order 52100 tubing today...

We'll ship tomorrow

NEED 52100 tubing on the double for a rush hollow parts job? Phone or wire today and we'll ship within 24 hours. One hundred and one sizes of Timken® 52100 steel tubing—from 1″ to 10½″ O.D. —available for less-than-mill-quantity orders.

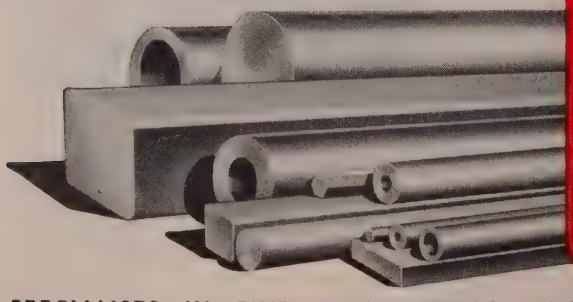
Timken 52100 steel will do most of your hollow parts jobs, often can be used in place of more expensive steels. It's a high-carbon chrome steel and is through hardening in moderate sections. Can be heat treated to file hardness and tempered back to any desired point.

52100 is ideal for hollow parts jobs such as aircraft parts, ball bearing races, pump parts and plungers collets, bushings, spindles, grinding machine part and precision instrument parts.

As America's pioneer producer of 52100 tubing, th Timken Company has a backlog of experience tha can't be topped. Result: you get uniform high quality from tube to tube and order to order.

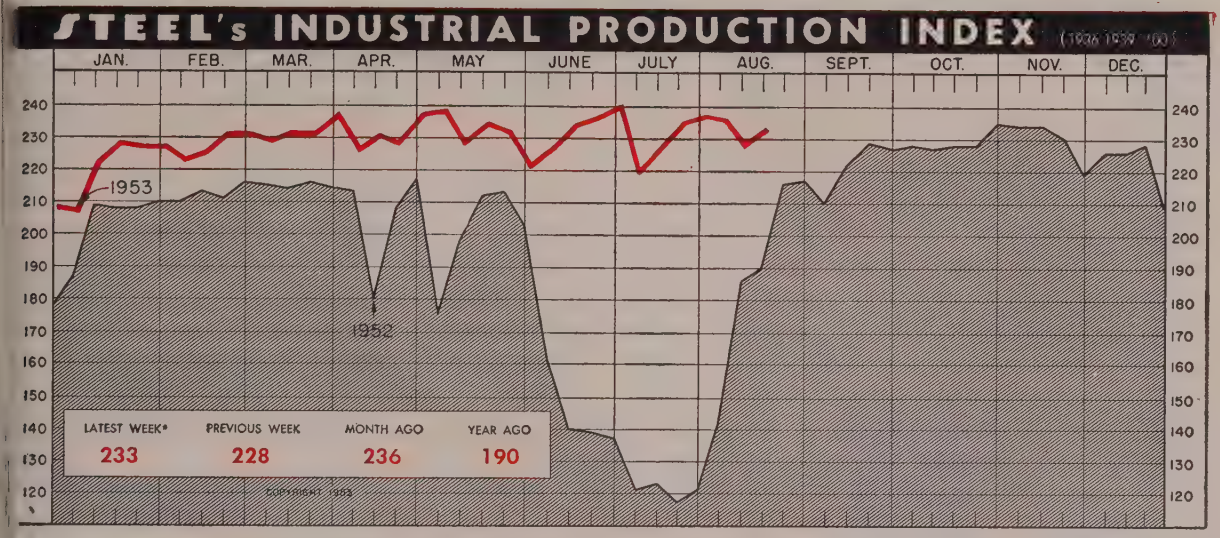
For immediate delivery of your less-than-mill-quan tity orders, write, or phone The Timken Roller Bearing Company, Steel and Tube Division, Canton 6, Ohio Cable address: "TIMROSCO".

YEARS AHEAD—THROUGH EXPERIENCE AND RESEARCH



TIMKEN
Fine Alloy
STEEL

SPECIALISTS IN FINE ALLOY STEELS, GRAPHITIC TOOL STEELS AND SEAMLESS TUBING



Industrial production index rises to within 7 points of record high set earlier this year, and one group of purchasing agents expects good business to continue

THE COUNTRY'S rate of industrial production in the week ended Aug. 15 rose 5 points over that of the preceding week and came within 7 points of equaling the record set earlier this year. The 5-point rise put STEEL's index up to 233 per cent of the 1936-1939 average.

This 5-point rise came, however, before full effects of the General Motors transmission plant fire at Livonia, Mich., could be reflected. Assembly plants were still running with stocks of transmissions that were on hand at the time of the fire. Immediate effect of this fire in auto assembly was more than offset by a step-up in auto production by Chrysler Corp.

Optimistic . . .

Although the GM disaster will have an effect on production, it is interesting to note that the members of the Purchasing Agents Association of Chicago believe business during the last half will continue close to the level of the first six months. A survey, taken before the fire, discloses that 50 per cent of a representative group expect business to be that good, with 25 per cent feeling it will be even better. Moreover, the optimism is carried over into the reports of anticipated work-week changes, where 83 per cent of those replying say the same or more man-hours will be required to fill their second-half orders.

Deliveries Delayed . . .

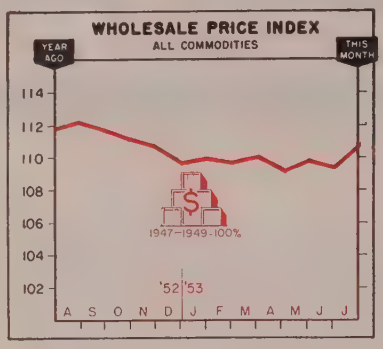
When it comes to orders, however, steel companies in particular are beginning to feel some effects of the GM catastrophe. One steel producer received a large number of wires requesting a delay in deliveries for Oldsmobile, Pontiac and Cadillac. There is a general hesitance on the part of automobile makers to state their fourth-quarter requirements. Meanwhile, steel companies are busy. In the week ended Aug. 22, furnaces of the steel industry poured 2,170,000 net tons of steel for ingots and castings, slightly more than in the previous week, the American Iron & Steel Institute reports.

Production Problem . . .

Besides affecting outturn of the three GM cars, the Livonia fire will cut off transmission shipments to Nash, Kaiser, Lincoln and Hudson. "No-shift" signs will appear at the Livonia plant and reduced shifts are expected wherever the transmissions were used. To get Hydra-Matic output up as soon as possible, GM will have the component parts made by other divisions. Salvage operations at the transmission plant will aid in this undertaking. Moreover, GM's other makes, Chevrolet and Buick, will set their schedules higher to make up for the lost production. Perhaps other automobile concerns may increase outturn also.

Auto Stocks Rise . . .

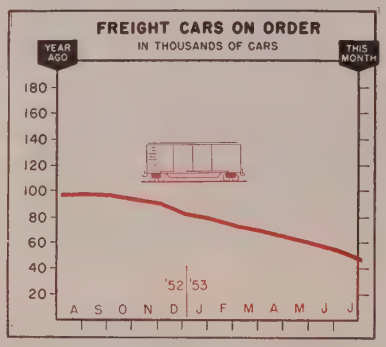
Latest figures on new car stocks show a rise to the highest point in two and one-half years. High rate of sales lessens the effect of this burden, however. On the other hand, dealers' supply of used cars was reduced 4 per cent from May through July, as purchases in July were about the same as in June and 3 per cent above May. During the week ended Aug. 15, production of cars and trucks by U. S. and Canadian plants totaled 155,179 units, about 17,000 more than in the previous week, according to *Ward's Automotive Reports*. This outturn set the stage for the 5-millionth vehicle of the year to be completed during this past week,



Wholesale Price Index
(1947-1949=100)

	1953	1952	1951
Jan.	109.9	113.0	115.0
Feb.	109.6	112.6	116.5
Mar.	110.0	112.3	116.5
Apr.	109.4	111.8	116.3
May	109.8	111.6	115.9
June	109.5	111.3	115.1
July	110.9	111.8	114.2
Aug.	....	112.2	113.7
Sept.	....	111.7	113.4
Oct.	....	111.1	113.7
Nov.	....	110.7	113.6
Dec.	....	109.6	113.5

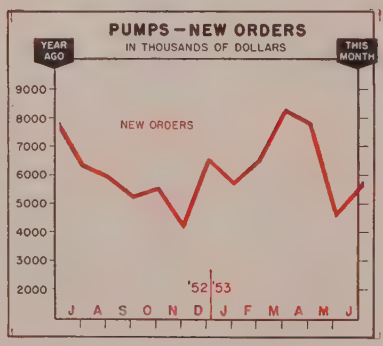
U. S. Bureau of Labor Statistics



Freight Car Awards and Backlogs

	Awards		Backlogs*	
	1953	1952	1953	1952
Jan.	5,536	5,338	77,414	120,251
Feb.	2,284	7,358	71,883	118,900
Mar.	3,379	5,619	68,553	115,854
Apr.	2,432	397	62,637	108,270
May	1,651	2,502	57,345	103,910
June	1,463	3,264	52,315	99,615
July	1,632	1,536	47,423	95,265
Aug.	....	4,558	.....	95,761
Sept.	....	3,628	.....	95,377
Oct.	....	1,423	.....	90,708
Nov.	....	2,878	.....	87,657
Dec.	....	1,159	.....	80,296
Total	....	37,261		

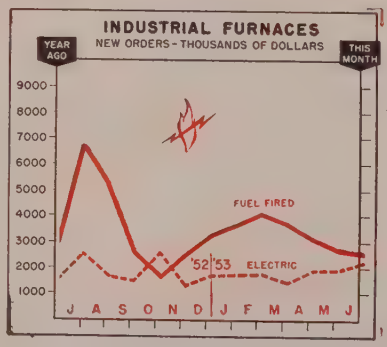
*End of month.
American Railway Car Institute



Pumps, New Orders
In Thousands of Dollars

	1953	1952	1951
Jan.	5,752	5,517	6,477
Feb.	6,521	6,020	6,480
Mar.	8,255	5,925	7,654
Apr.	7,758	6,354	7,583
May	4,629	6,140	6,371
June	5,690	7,957	6,852
July	....	6,299	8,358
Aug.	....	5,921	5,911
Sept.	....	5,258	6,552
Oct.	....	5,534	6,506
Nov.	....	4,130	5,908
Dec.	....	6,575	5,553
Total	....	71,630	80,175

Hydraulic Institute



Industrial Furnaces
New Orders—Thousands of Dollars

	Fuel Fired*		Electric	
	1953	1952	1953	1952
Jan.	3,540	3,379	1,655	2,856
Feb.	3,996	2,413	1,672	1,363
Mar.	3,607	1,813	1,301	2,100
Apr.	3,017	3,606	1,796	2,298
May	2,609	3,032	1,799	3,713
June	2,550	2,954	2,095	1,552
July	....	6,728	....	2,530
Aug.	....	5,259	....	1,626
Sept.	....	2,462	....	1,412
Oct.	....	1,507	....	2,459
Nov.	....	2,382	....	1,241
Dec.	....	3,235	....	1,634

*Except for hot rolling steel.
Industrial Furnace Mfrs. Assn.

Charts Copyright 1953 STEEL

Issue Dates on other FACTS and FIGURES Published by STEEL

Construction .....Aug. 10	Indus. Production..Aug. 17	Refrigerators .....Aug. 3
Durable Goods ....Aug. 10	Ironers .....Aug. 17	Steel Castings .....July 20
Employ. Metalwk..Aug. 10	Machine Tools ....Aug. 3	Steel Forgings ....July 20
Employ., Steel ....June 1	Malleable Castings.July 20	Steel Shipments ..June 22
Fab. Struc. Steel..Aug. 10	Prices, Consumer..June 22	Vacuum Cleaners..Aug. 3
Foundry Equip. ...July 27	Radio, TV .....May 25	Wages, Metalwk. ..July 6
Gear Sales .....Aug. 17	Ranges, Elec. ....Aug. 3	Washers .....Aug. 17
Gray Iron Castings.July 20	Ranges, Gas .....May 18	Water Heaters ....July 29

when U. S. plants turned out about 146,000 vehicles.

Railroads Busy . . .

So far this year the railroads of the country have carried 23,471,534 carloads of revenue freight, compared with 22,286,717 in the same period of 1952 and 24,534,387 during the same period of 1951. During the week ended Aug. 8, freight loadings totaled 785,349 cars, 1.1 per cent less than in the previous week, the Association of American Railroads says. Biggest factor in the decrease was reduced loadings of ore. This could be explained by large stockpiles of ore at some inland producers, who at the moment would not want more ore to be transshipped to them from the lake ports. Looking ahead to the time when iron ore imports will be rising, an Interstate Commerce commissioner recommended to the commission that railroads picking up imported ore at Newport News and Norfolk, Va., for shipment to the Great Lakes area should be permitted to reduce rates so they can better compete with roads serving the port of Baltimore.

Cautious on Freight Rates . . .

In another action, the ICC refused to make the 15 per cent surcharge on railroad freight rates permanent. The hazards of trying to predict the nation's economic position over the long term was given as the reason for the denial, although the agency did extend the expiration date by 22 months from next Feb. 28 on the ground that the railroad industry had to be kept growing and healthy.

Electric Revenues Up . . .

Turning to electric utilities, preliminary figures of the Federal Power Commission show that although electric power revenues in June were 12.2 per cent above the same month a year ago, the costs of operation were up 12.6 per cent and as a result, net income was up only 9.6 per cent. This follows the income path of many industries, where sales are up considerably, yet the increased costs have reduced the net income. Even though this trend dampens the ardor of investors, its effect on those with

BAROMETERS OF BUSINESS

	LATEST PERIOD	PRIOR WEEK	YEAR AGO
INDUSTRY			
Steel Ingot Output (per cent of capacity)[2]	96.0	96.5	94.5
Electric Power Distributed (million kwhr)	8,514	8,464	7,627
Bitum. Coal Output (daily av.—1000 tons)	1,566	1,533	1,581
Petroleum Production (daily av.—1000 bbl)	6,525[1]	6,538	6,278
Construction Volume (ENR—millions)	$311.3	$326.5	$237.5
Automobile, Truck Output (Ward's—units)	155,179	137,671	36,890
TRADE			
Freight Car Loadings (unit—1000 cars)	780[1]	785	806
Business Failures (Dun & Bradstreet, no.)	150	195	141
Currency in Circulation (millions)[3]	$30,158	$30,139	$29,051
Dept. Store Sales (changes from year ago)[3]	+2%	−1%	+2%
FINANCE			
Bank Clearings (Dun & Bradstreet, millions)	$15,589	$16,518	$14,281
Federal Gross Debt (billions)	$272.6	$272.7	$263.0
Bond Volume, NYSE (millions)	$11.6	$12.2	$13.4
Stocks Sales, NYSE (thousands of shares)	5,058	5,390	5,068
Loans and Investments (billions)[4]	$79.9	$79.6	$75.7
U. S. Gov't. Obligations Held (billions)[4]	$32.5	$32.7	$32.6
PRICES			
STEEL's Finished Steel Price Index[5]	189.38	189.38	181.40
STEEL's Nonferrous Metal Price Index[6]	206.1	206.0	223.2
All Commodities[7]	110.6	110.7	112.2
Commodities Other Than Farm & Foods[7]	114.8	114.8	113.0

*Dates on request. [1]Preliminary. [2]Weekly capacities, net tons: 1953, 2,254,459; 1952, 2,077,040. [3]Federal Reserve Board. [4]Member banks, Federal Reserve System. [5]1935-1939=100. [6]1936-1939=100. [7]Bureau of Labor Statistics Index, 1947-1949=100.

investment funds is tempered by the ever-increasing sales. During the week ended Aug. 8, the generation of electric power totaled 8,463,616,000 kilowatt-hours, a slight drop from the record output of the previous week but still 12.9 per cent above the corresponding week in 1952, the Edison Electric Institute says.

Construction Record . . .

As with prices, the value of construction contracts through the week ended Aug. 13 continued above a year ago. Awards totaling $9,872,532,000 were placed in the first 33 weeks of this year, compared with $9,561,200,000 in the first 33 weeks of 1952, according to *Engineering News-Record*. During the latest week, mass housing contracts dropped to $20.4 million, the lowest week so far in 1953. Notwithstanding this factor new construction outlays in 1953 are expected to establish a new record. Considering total outlay, the Commerce and Labor departments estimate $34.6 billion will be allocated for construction. This figure is $1 billion higher than their earlier forecast, but the agencies say that a little more than half of the construction outlay has been placed with builders already.

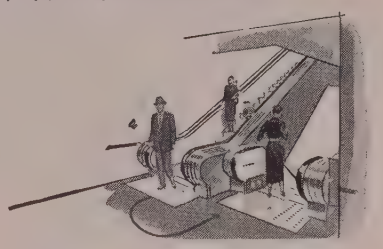
Tighter Money . . .

The availability of bank funds will effect the amount of construction and many other outlays also. New York City bankers now say that lending money is nearly as tight as it was last April and that it will probably get tighter. Last spring, the Federal Reserve System reduced the reserve requirements, and in May it began purchasing government securities from commercial banks. This buying policy lasted only nine weeks but, along with the lessened reserves, it had the desired effect of increas- in the money supply. Soon, further action may be necessary.

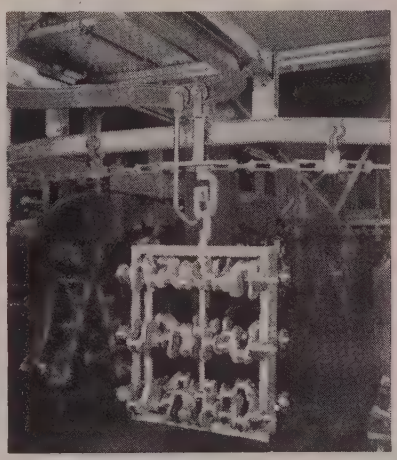
Trends Fore and Aft . . .

June shipments of aluminum wrought products amounted to 205 million pounds, 2 per cent below the level of the previous month . . . Factory shipments of truck trailers during June totaled 9580 units valued at $26.4 million. This was a 2 per cent increase in number from May . . . Shipments of complete civilian aircraft amounted to 930,600 pounds in June.

Trans-Free Automation



Trans-Free Conveyor System — automatically transfers loads from main Live Line to Free Lines—and back again.



One of the intermediate production stations in the Allied Trans-Free Conveyor System, showing a rack of parts being transferred from the *Live Line* to the *Free Line*.

At various locations production parts can be automatically removed from the main Live Line to adjacent Free Lines. At these points, intermediate production operations are performed. Upon completion, the loads are automatically transferred back to the main Live Line.

The Allied Trans-Free System is applicable to any type of product, large or small.

Allied are specialists on *Automation* and highly engineered *Load Transferring* material handling systems. Consult with our engineering staff on material handling problems that arise in your plant.

See Allied Catalog 952 in Sweet's Mechanical Industries or write us for a copy.

ALLIED
STEEL AND CONVEYORS, INC.
17353 HEALY AVE., DETROIT 12, MICH
Complete Material Handling Systems
Designed • Fabricated • Erected

more tons per dressing from

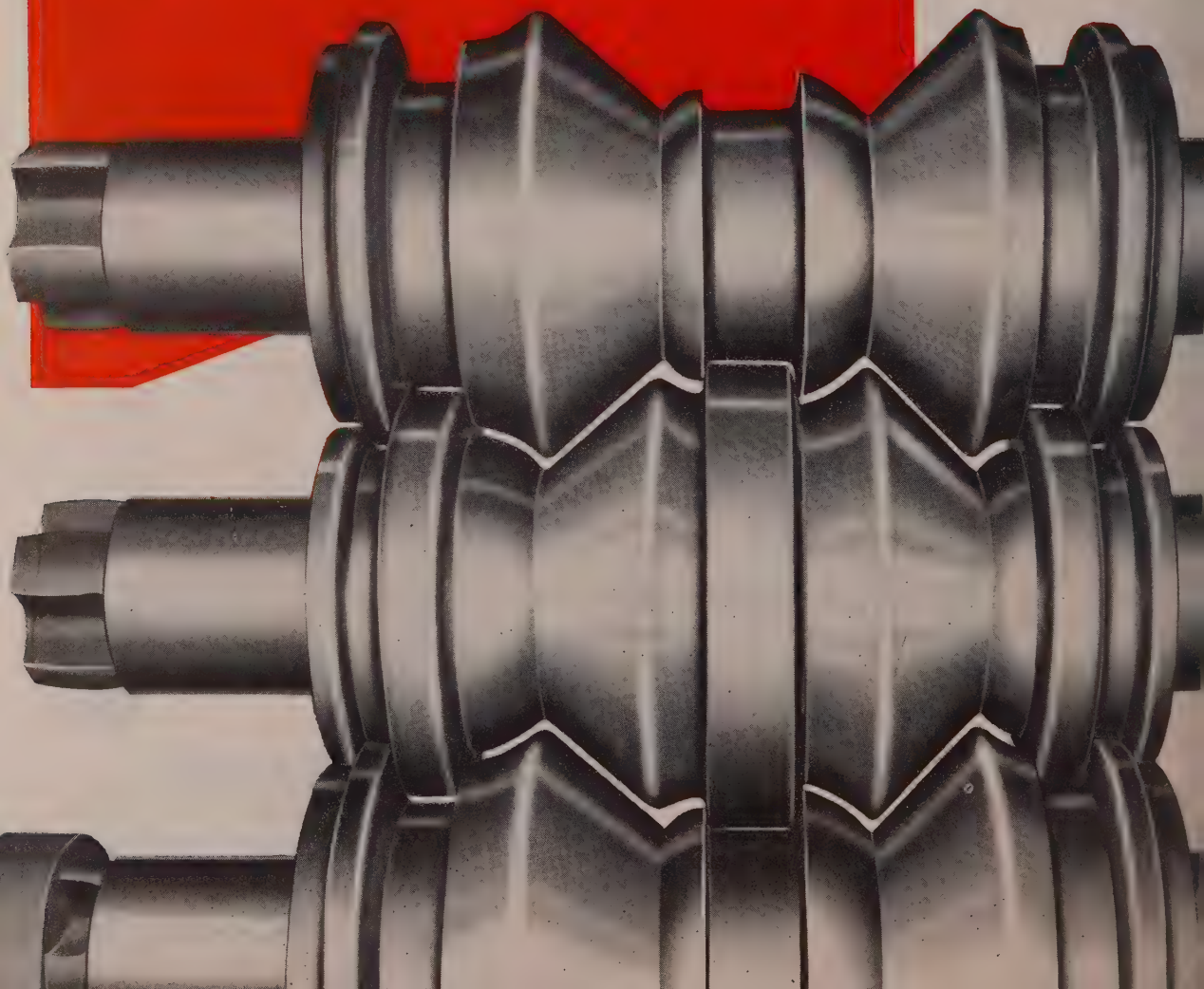
Ohio Rolls

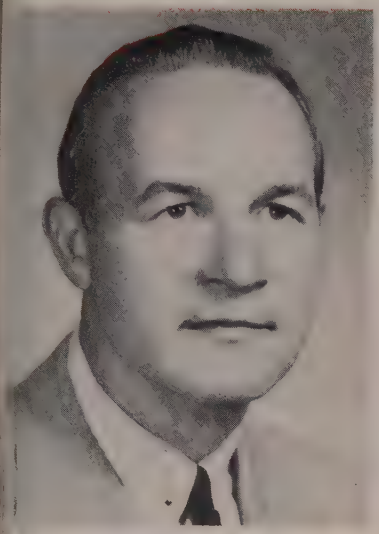
SHAPING METAL FOR ALL INDUSTRY

THE OHIO STEEL FOUNDRY CO.

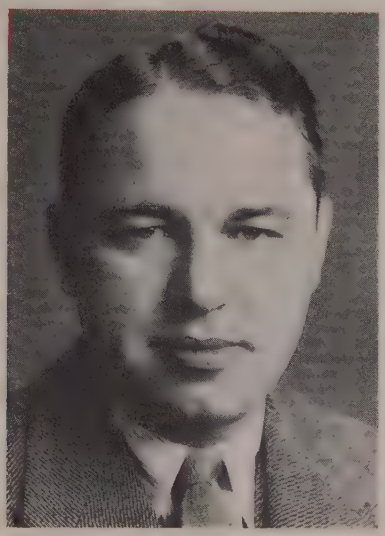
LIMA, OHIO • PLANTS AT LIMA • AND SPRINGFIELD, OHIO

Carbon Steel Rolls
Ohioloy Rolls
Ohioloy "K" Rolls
Holl-O-Cast Rolls
Chilled Iron Rolls
Denso Iron Rolls
Nickel Grain Rolls
Special Iron Rolls
Nioloy Rolls
Flintuff Rolls
Ohio Double-Pour R





EDWARD C. MYERS



WILBUR L. LOHRENTZ

. . . vice presidents, industrial relations at U. S. Steel Corp.

C. C. CRAFT

. . . Iron Fireman v. p. and secretary

Wilbur L. Lohrentz and **Edward C. Myers** were appointed assistant vice presidents in the industrial relations department of **U. S. Steel Corp.**, Pittsburgh. **J. Warren Shaver** will continue as assistant vice president and, with Mr. Lohrentz, will provide counsel on labor relations. Mr. Myers will advise on personnel matters. Other appointments at U. S. Steel are that of **Franklin W. Peters** as assistant general superintendent, Frick District-coal division, with headquarters in Pittsburgh; and **Tell D. Tuffli** as assistant district manager, U. S. Steel Supply division, succeeding **William J. Borwick,** who was promoted to district manager in Portland, Oreg.

Edward D. Fagan was appointed sales engineer for materials handling equipment by **Heppenstall Co.**, Pittsburgh.

Hercules Powder Co., Wilmington, Del., appointed **George A. Parker** manager of the explosive sales office in Pittsburgh, and **Thomas E. Brown** manager in Hazleton, Pa. **Philip R. Hammond** was made assistant manager in the Pittsburgh office. Mr. Parker succeeds **C. W. Ballard,** who becomes director of sales for the explosives department. Mr. Brown succeeds Mr. Parker in Hazleton.

Charles E. Greenlee was named assistant to the vice president of sales at **Basic Refractories Inc.**, Cleveland. He will assist in development projects for new applications of basic granular refractories produced at the company's Gabbs, Nev., and Maple Grove, O., facilities.

Appointment of **P. C. Foote** as manager of foreign sales of **Cutler-Hammer Inc.**, Milwaukee, was announced. **T. D. Montgomery** was named consultant on foreign business.

Appointment of **John C. Guenther** as assistant director of the technical information section of **Chrysler Corp.'s** engineering division, Detroit, was announced. **J. W. Duhn** and **H. R. Voorhees** were named as assistant chief engineers in the electrical section of the division.

John T. Marshall is chief engineer of the Hamilton, O., division, of **Bendix Aviation Corp. Robert W. Scott** was named assistant chief engineer.

George Schumann was named chief design consulting engineer for **Kaiser Engineers,** Oakland, Calif. Replacing Mr. Schumann as chief design engineer is **F. B. Tobias,** who joined Kaiser in 1941.

C. C. Craft was made vice president and secretary of **Iron Fireman Mfg. Co.**, Cleveland. He has been with the company 26 years and served as secretary and controller since 1951.

O. S. Dollison, vice president of **Lee Rubber & Tire Corp.,** Conshohocken, Pa., will retire Oct. 1. Mr. Dollison, formerly with B. F. Goodrich Co., in Akron and Detroit, in 1922 joined Republic Rubber Co. of Youngstown, which was to become Republic Rubber Division of Lee Rubber & Tire Corp. He served as sales manager, vice president in charge of sales and vice president and general manager of the division before his present position with the main firm. **J. A. MacIntire Jr.** was named assistant manager of sales for wire braid hose for the **Republic Rubber Division** in Youngstown.

Raymond J. Schwanekamp was named manager of the manufacturing engineering department of the Buffalo assembly plant, **Ford Motor Co.**, succeeding **Allistair Dunn,** who resigned. Other Ford Motor Co. appointments were at the newly established tractor division, Birmingham, Mich. They include: **Merritt D. Hill,** assistant general manager; **B. A. Best,** divisional controller; **R. E. Hunt,** general manu-

DR. M. C. TEAGUE
. . . heads Lock Thread Corp.

CARL R. ROLF
. . . Pioneer Engineering Works v. p.

CLAYTON L. HEINTZ
. . . Cooper Alloy Foundry appointment

facturing manager; **Dale Roeder**, chief engineer; **I. R. Kappler**, general purchasing agent; **J. J. Mooney**, industrial relations manager; and **E. Scott Rumely**, product planning and programming manager. **E. F. Keller** became general manager, **Wood Bros. Inc.**, Des Moines, Iowa, a Ford subsidiary.

Dr. M. C. Teague was appointed president of **Lock Thread Corp.**, Detroit. He succeeds **Samuel J. Metzger Jr.**, who will continue as a director of the corporation.

E. J. Vargo was appointed assistant production manager at **Wellman Bronze & Aluminum Co.**, Cleveland.

Richard M. Donahue succeeds **M. L. Ruggieri**, resigned, as manager of the Birmingham plant of **Line Material Co.**

Appointment of **Mark L. Shepard** as manager of the Richmond division of **Gar Wood Industries Inc.**, Richmond, Calif., was announced. Mr. Shepard succeeds **J. B. Steed**, who reports to Gar Wood's executive office, Wayne, Mich., for new assignment.

John H. Hosking, formerly with Hollaender Mfg. Co., Cincinnati, was appointed general manager of the U. S. subsidiary of **George H. Gascoigue Co. Ltd.**, Reading, England. The offices and warehouse of the new subsidiary, to be known as **Kee Klamps Inc.**, will be in Hamilton, O.

Carl R. Rolf was appointed vice president in charge of sales, **Pioneer Engineering Works**, Minneapolis. He has held positions in the company as assistant sales manager, assistant secretary and sales manager, and as vice president and sales manager.

L. G. Germain was appointed northwest district supervisor of technical service for **American Can Co.**, with headquarters at the Seattle plant. He succeeds **N. J. Willett**, transferred to the company's technical service laboratory, Maywood, Ill.

General Electric Co., Schenectady, N. Y., named **Robert C. Hanna** as manager of marketing to head the newly established marketing department in the component products division. **Robert M. Parke** was appointed manager of the materials and processes section of the metallurgy research department of the research laboratory, and **R. H. Jackson** became manager of sales for the southeastern district of General Electric's apparatus sales division, with headquarters in Atlanta.

Grayton F. Dressel was promoted to production manager of inorganic chemicals, **Dow Chemical Co.**, Midland, Mich. He succeeds **Ivan F. Harlow**, who will continue to serve Dow as production consultant and who is currently president of **Ethyl-Dow Chemical Co.**, an associated company. Mr. Dressel has been assistant to Mr. Harlow since 1947.

Cooper Alloy Foundry Co., Hillside, N. J., appointed **Clayton L. Heintz** as manager of distribution. He comes to the company from Ludlow Mfg. & Sales Co., where he was a branch manager.

Frank Iapalucci was made welding engineer for **Baldwin-Lima-Hamilton Corp.**, Philadelphia.

James W. Frasor succeeds **W. W. Alexander**, resigned, as manager of sales, industrial products division, **Northwestern Steel & Wire Co.**, Sterling, Ill.

Marquardt Aircraft Co., Van Nuys, Calif., appointed **Paul J. Papanek** eastern district manager in charge of the Dayton, O., office. **R. K. Wead** was named to head a new application engineering department. **Edward T. Wenzlik** was named staff assistant to the director of engineering and manufacturing and **R. C. Katz** staff assistant to the manager, contracts management department.

Caterpillar Tractor Co. announces three new appointments at its new York, Pa., plant. Manager of the parts department is **W. E. Doersam**, former parts manager of the company's central division. **M. D. O'Byrne**, former parts office manager at the Peoria, Ill., plant, becomes manager of the York parts office division; and **R. W. Cooper**, former superintendent of the Peoria parts stores division, becomes manager of the York stores divi-

Windpipe for a peaceful H-bomb

You can call it an H-bomb if you like. Some people do. Technically, it *is* a hydrogenation bomb or, simply, a super-pressure vessel. Uses for it are legion but not warlike.

Researchers in rubber, plastics, pharmaceuticals, petroleum, and solvents pilot their hydrogenation, oxo-reaction, polymerization and other jaw-breaker problems in its gizzard—under high pressure.

To speed-up chemical reactions, the vessel is rocked 38 times a minute. Pressurizing a see-sawing chamber is in itself a neat trick: when pressures of the order of 60,000 p.s.i. are required you might become discouraged or concerned.

American Instrument Company, Inc., maker of Super-pressure equipment, introduces the pressure through a spiral windpipe. They had some trouble through tube breakage but that was before they tried Superior 304 Cold-drawn Seamless Stainless Steel Tubing. Superior gives them just the flexibility and fatigue strength needed for cyclic operation, plus chemical resistance and burst pressure to spare. Spirals of Superior 304 are easier to bend, last longer. And American Instrument reports them dimensionally uniform, smooth and free from surface imperfections.

If you haven't found small tubing in the analysis, size, and finish you want, or if you think there's little difference in tubing or tubing experience, Superior invites your inquiry. Superior Tube Company, 2005 Germantown Avenue, Norristown, Pennsylvania.

Round and Shaped Tubing available in Carbon, Alloy, and Stainless Steels; Nickel and Nickel Alloys; Titanium, Zirconium, and Beryllium Copper

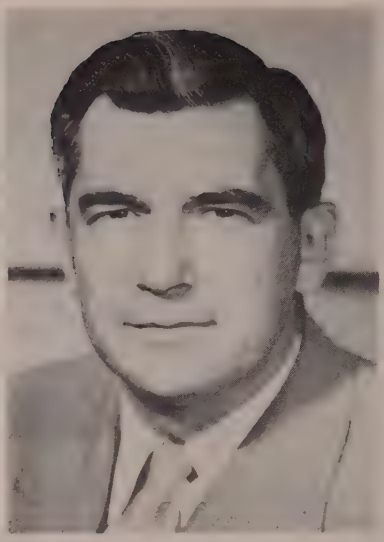
Superior

THE BIG NAME IN SMALL TUBING

West Coast: Pacific Tube Company, 5710 Smithway St., Los Angeles 22, Calif. UNderhill 0-1331

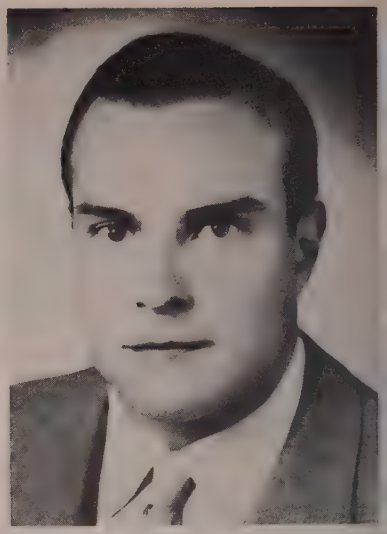
All analyses .010" to ⅝" O.D.
Certain analyses (.035" max. wall) up to 1¾" O.D.

ROBERT L. PURCELL



MARTIN SEGAL

. . . receive promotions at Nesco Inc.



MASON PHELPS JR.

New president of Pheoll Mfg. Co., Chicago. Noted in STEEL, Aug. 3 issue, p. 79.

sion. Mr. O'Byrne and Mr. Cooper both report to Mr. Doersam as manager of all parts functions.

Robert L. Purcell, vice president and treasurer, **Nesco Inc.,** Milwaukee, was promoted to executive vice president. **Martin Segal** was elected vice president, treasurer.

Leon P. Disinger is retiring as vice president and general manager, **Buckeye Brass & Mfg. Co.,** Cleveland. Starting with the company in 1923, Mr. Disinger has also held positions as factory manager, sales engineer and sales manager.

Lukens Steel Co., Coatesville, Pa., appointed **James M. Quarry** assistant superintendent in the plate mills. **Harold A. Grubb** was named assistant metallurgical engineer in the plant. **Samuel D. Lemmon** becomes assistant metallurgical engineer, service; and **George L. Stroman** is supervisor of the miscellaneous finishing department.

A. C. Olbeter was appointed superintendent of the hammer shop at the Park Works of **Crucible Steel Co. of America,** Pittsburgh.

L. M. Wolf for 20 years with Chrysler Corp., was named West Coast division manager of the **Cycleweld Cement Products Division,** Los Angeles.

R. S. Schmieder retired from **Inland Steel Products Co.,** Milwaukee. A veteran of 39 years in the sheet metal fabricating industry, he has held the position of general sales manager since 1945.

N. Rulison Knox will become assistant to the board chairman of **Poor & Co.,** Chicago, on Sept. 1. He resigned from Bucyrus-Erie Co., South Milwaukee, where he was vice chairman of the board.

OBITUARIES . . .

Ellwood C. Howell, 48, advertising and sales promotion manager, **Carboloy Department** of General Electric Co., Detroit, died Aug. 13. He had been secretary, vice president and director, National Industrial Advertisers Association. He was sales promotion committee chairman, American Supply & Machinery Manufacturers Association.

L. M. Klinedinst, a former vice president and director of **Timken Roller Bearing Co.,** Canton, O., died Aug. 10.

Fred C. Young, 60, manager of sales, **Union Drawn Steel Division,** Republic Steel Corp., Massillon, O., died Aug. 14.

Bradford C. Colcord, 56, a director and former president of **Woodward Iron Co.,** Woodward, Ala., and former superintendent, **National Tube Division,** U. S. Steel Corp., Lorain, O., died Aug. 16. He was a director of the National Association of Manufacturers, the Southern Industrial Conference Board and the Associated Industries of Alabama.

Ellis B. Ridgway, 83, former vice president, **Ridgway Foundry,** Coatesville, Pa., died Aug. 13.

Anthony Siebenlist, 72, former design engineer, **Inland Steel Co.,** Milwaukee, died Aug. 9.

Allen E. Olson, 58, sales representative, **West Bend Aluminum Co.,** West Bend, Wis., died Aug. 10.

George B. MacDonald, 67, sales manager, **Crest Mfg. Co.,** Long Island City, N. Y., died Aug. 8.

A. L. Beneke, secretary-treasurer, **Wheeling Corrugating Co.,** Wheeling, W. Va., died Aug. 9.

Theodore L. Welles Jr., 61, sales manager, **Sanymetal Products Co.,** Cleveland, died Aug. 11.

James M. Morrow, 58, vice president in charge of sales, **Dayton Steel Foundry Co.,** Dayton, O., died.

George Brooke, 86, former vice president of **E. & G. Brooke Iron Co.,** Birdsboro, Pa., and of Birdsboro Steel Foundry & Machine Co., Birdsboro, Pa., died Aug. 10. E. & G. Brooke Iron Co. is now a part of Colorado Fuel & Iron Corp.

WICKWIRE WIRE

for mechanical springs

When you select Wickwire Wire you're always sure of wire that has the definite physical properties best suited for your particular spring application.

That's because Wickwire Wire . . . Hard Drawn, Spheroidized or Oil Tempered . . . is a product of long experience, skilled craftsmanship and completely integrated facilities starting with actual steel making. Thus, every step of its production is under constant and uninterrupted control, subject to thorough-going testing, checking and inspection.

High or low carbon steel . . . round or shaped . . . in all tempers, grades and finishes, it pays to remember—*For the Wire You Require, Check First With Wickwire.*

THE COLORADO FUEL AND IRON CORPORATION—Denver, Colorado
PACIFIC COAST DIVISION—Oakland, California
WICKWIRE SPENCER STEEL DIVISION—Atlanta • Boston • Buffalo
Chicago • Detroit • New Orleans • New York • Philadelphia

WICKWIRE WIRE

PRODUCT OF WICKWIRE SPENCER STEEL DIVISION
THE COLORADO FUEL AND IRON CORPORATION

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"PYRODISC"

ONLY $25!*

the new *LINDBERG* HOT PLATE

At last! A quality, portable hot plate . . the Lindberg Pyrodisc!

It's built with the "occasional user" in mind. There's no point in buying the extra capacity of a larger hot plate if you don't need it. If your volume of "hot plate" work is limited, the Lindberg Pyrodisc is just what you want . . and its selling price is only $25.

These design, construction, and operating features make the Lindberg Pyrodisc Hot Plate an exceptional buy!

- Cast-in elements.
- "Stepless" control permits extremely precise control of temperatures.
- Terminals are protected from spillage and short circuits.
- Streamlined appearance . . it's not just a good piece of equipment . . it looks good, too!

Diameter, top plate and base 8″ • Power rating, 660 watts • Power service, 115 volts, 50/60 cycle • Includes cord and plug for easy installation • Approximate shipping weight, 10 lbs.

For additional information, ask for bulletin No. 1030

*Price subject to change without notice.

Sheathed Nichrome heating elements are cast into aluminum top plate . . insuring quicker heating (750° F in 35 minutes), good uniformity, and exceptionally long element life.

SOLD ONLY THROUGH LABORATORY SUPPLY DEALERS

LINDBERG LABORATORY EQUIPMENT

Laboratory Division, Lindberg Engineering Company, 2441 West Hubbard Street, Chicago 12, Illinois

Caterpillar Expands

Decatur, Ill., selected as site for additional manufacturing facilities

CATERPILLAR TRACTOR CO., Peoria, Ill., selected Decatur, Ill., as the site of a new manufacturing plant. Plans for the plant, which will devote its facilities to the manufacture of motor graders and industrial wheel tractors, are part of the company's expansion program.

Total cost of new machinery and equipment at all plants and of land and buildings at the new plant, in the latest realignment of the company's manufacturing facilities is estimated at about $45 million.

Warren Kinsey was appointed as manager of the Decatur plant. His assistants are: A. W. Johnson, manager of manufacturing; Ridley Orton, purchasing agent; H. O. Nelson, manager of employee relations; and C. A. Vobroucek, chief accountant.

Engine Division—The company also has created an Engine Division, says L. B. Neumiller, president. The division will be managed by H. H. Howard, formerly director of domestic sales. He will have charge of the company's commercial engineering, orders, product engineering, pricing and scheduling of all engines. In addition, he will supervise sales of engines to manufacturing customers.

W. K. Cox, now advertising manager, was appointed manager of a newly-formed sales promotion department. The sales training division, sales development division, and advertising department are to become the three divisions of the new department.

Named to succeed Mr. Howard as director of domestic sales is W. S. Zeigler.

Rochester Plant Still Growing

Rochester Products Division, General Motors Corp., Rochester, N. Y., continues to expand its facilities. The plant now covers more than 800,000 sq ft of floor space. Hundreds of miles of steel tubing are produced daily for automotive brake, vacuum, oil and gas lines and for refrigeration, as well as for numerous products and appliances made outside the General Motors family. The plant also produces carburetors, fuel pumps, keys, locks, cigar lighters, power and fuel controls, primer and burster tubes, and other military equipment. Present plans call for additional products with consequent expansion of facilities to handle their manufacture.

Revere Forms New Department

Revere Copper & Brass Inc., New York, formed an aluminum general sales department to parallel the company's copper and brass general sales department. Stanley H. Wilson, formerly sales manager of Revere's Aluminum Division in Baltimore, was appointed aluminum sales manager of the new department. Edward S. Bunn, formerly metallurgical manager of the Aluminum Division, was assigned to Revere's general manufacturing department in New York.

Disston Builds in Wisconsin

Henry Disston & Sons Inc., Philadelphia, is erecting a chain saw manufacturing plant in Madison, Wis. The company has taken over the building formerly occupied by General Mfg. Co. at Wisconsin Dells, Wis., where the firm's first Wisconsin operations will get under way. The latter plant will produce chain saws at the outset but will act only as a "feeder" when the Madison plant is operating.

R. G. May Gets Association Post

Richard G. May of New York was elected vice president in charge of the operations and maintenance department, Association of American Railroads, Washington. He succeeds James H. Aydelott who will retire Aug. 31 after 51 years of railroad service.

Alloys Firm Names Agents

All-State Welding Alloys Co. Inc., White Plains, N. Y., appointed as distributors, stocking the firm's alloys and fluxes: Lake Welding Supply Co., Muskegon, Mich.; Lincoln Welding Supply Co., Lincoln, Nebr.; Suburban Welders Supply Co. Inc., Newtonville, Mass.; McEvoy Supplies Inc., Charleston, S. C.; Tennessee Welding Supply Co., Knoxville, Tenn.; California Welding Gases, Salinas, Calif.; Illinois-Missouri Welding Products Co., Jacksonville, Ill.; Lee Equipment Co., Detroit.

Still Going Strong

Elgin Corrugated Box Co. claims a record with its 35-year-old industrial tractor. It has been down for repairs only three times during all those years and has moved everything from paper to freight cars. It was manufactured by Mercury Mfg. Co., Chicago

Cornish Wire Co. Expands

Cornish Wire Co. shifted part of its wiremaking production to North Adams, Mass., to free home plant space at Williamstown, Mass., for other expansion. A third plant is located at Rutland, Vt. At North Adams, electric cord for homes and appliances will be produced.

Ludlow-Saylor Changes Name

Ludlow-Saylor Wire Co., St. Louis, changed its corporate name to Ludlow-Saylor Wire Cloth Co. The company was established in 1856 and had been known as Ludlow-Saylor Wire Co. since 1875. The company produces industrial wire cloth.

Chrome Plating Plant Opened

Southeastern Metals Co., Birmingham, completed installation of a fully automatic chrome plating plant. The company is engaged now in plating dinette suites and

expects to develop considerable contract business from concerns without such facilities.

Stanley To Build in Denver

Stanley Aviation Corp., Buffalo, will start construction of a $500,000 plant near the airport at Denver as soon as financing is arranged. The company is completing a $100,000 expansion of its Buffalo plant.

Republic Mfg. Names Agents

Republic Mfg. Co., Cleveland, maker of hydraulic valves, appointed as distributors: Florida Metals Inc., Tampa, Jacksonville and Miami, Fla.; E. D. Sweetland Co., San Francisco; Pace-Turpin & Co., Salt Lake City, Utah; Palmer Supply Co., Seattle.

Budd Forms New Department

The Budd Co., Philadelphia, established a commercial products department under the general direction of H. A. Coward, vice president. J. G. Richard Heckscher, commercial products manager, assumes responsibility for operation of this department. Fred T. Roberts has assumed the duties of wheel products manager, operating out of the firm's Detroit office. The new department will assume the duty of co-ordinating and stimulating manufacturing, engineering and sales activities in all product categories except automobile bodies and railway cars.

Chevrolet Expansion Progresses

Chevrolet Motor Division, General Motors Corp., Detroit, plans to begin production in its new plants in Tonawanda, N. Y., next spring or early summer. Four new plants for a forge and foundry are well under way as part of Chevrolet's $30-million expansion. The construction is forming a mile-long industrial center that runs from the aviation plant on Kenmore avenue to the engine plant on River road.

Dow Honors Dr. W. R. Veazey

Dedication of Dow Chemical Co.'s $2.6-million research center at Freeport, Tex., in honor of Dr. William Reed Veazey, recently retired Dow director and research consultant, is announced by Dr. Leland I. Doan, company president. The research center will be completed in September and will house the Texas Division's organic, chemical engineering and electrochemical research as well as the analytical laboratory. Dr. A. P. Beutel, Dow vice president, is general manager of the Texas Division.

Walben To Triple Floor Space

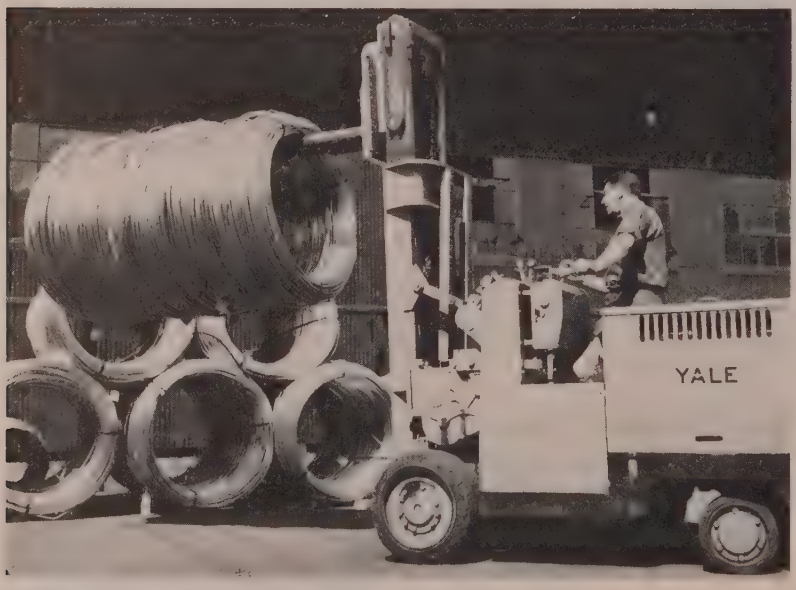
Walben Inc., Wilkes-Barre, Pa., producer of aluminum forgings, is negotiating for additional property to keep step with its expanding activities. The firm plans to triple its floor space to about 45,000 sq ft. The firm began operations at 611 S. Main St. last October.

Adamas Names Representative

Adamas Carbide Corp., Harrison, N. J., manufacturer of standard carbide tools, tool tips, dies and wear parts, appointed Tool Specialists Inc., Westbury, Long Island, N. Y., as its sales representative for northern New Jersey. Tool Specialists Inc. will maintain a branch office at 694 Bruce St., Ridgefield, N. J.

Erveen To Make Enamelware

Erveen Corp., Erie, Pa., has begun operations as an offshoot of the Ervite Corp. at the same address. The new firm will manufacture architectural porcelain enamelware.



Efficient Materials Handling Speeds Output

Aluminum coils for Anaconda Wire & Cable Co.'s mill at Hastings-on-Hudson, N. Y., come in by rail. Here, boom attachment on lift trucks has speared a ten-section load and is setting it up temporarily alongside the mill department where coil ends will be welded together and drawn to desired wire sizes. A single truck of this kind can empty a box car in about two hours

Connors Steel Warehouse Opens

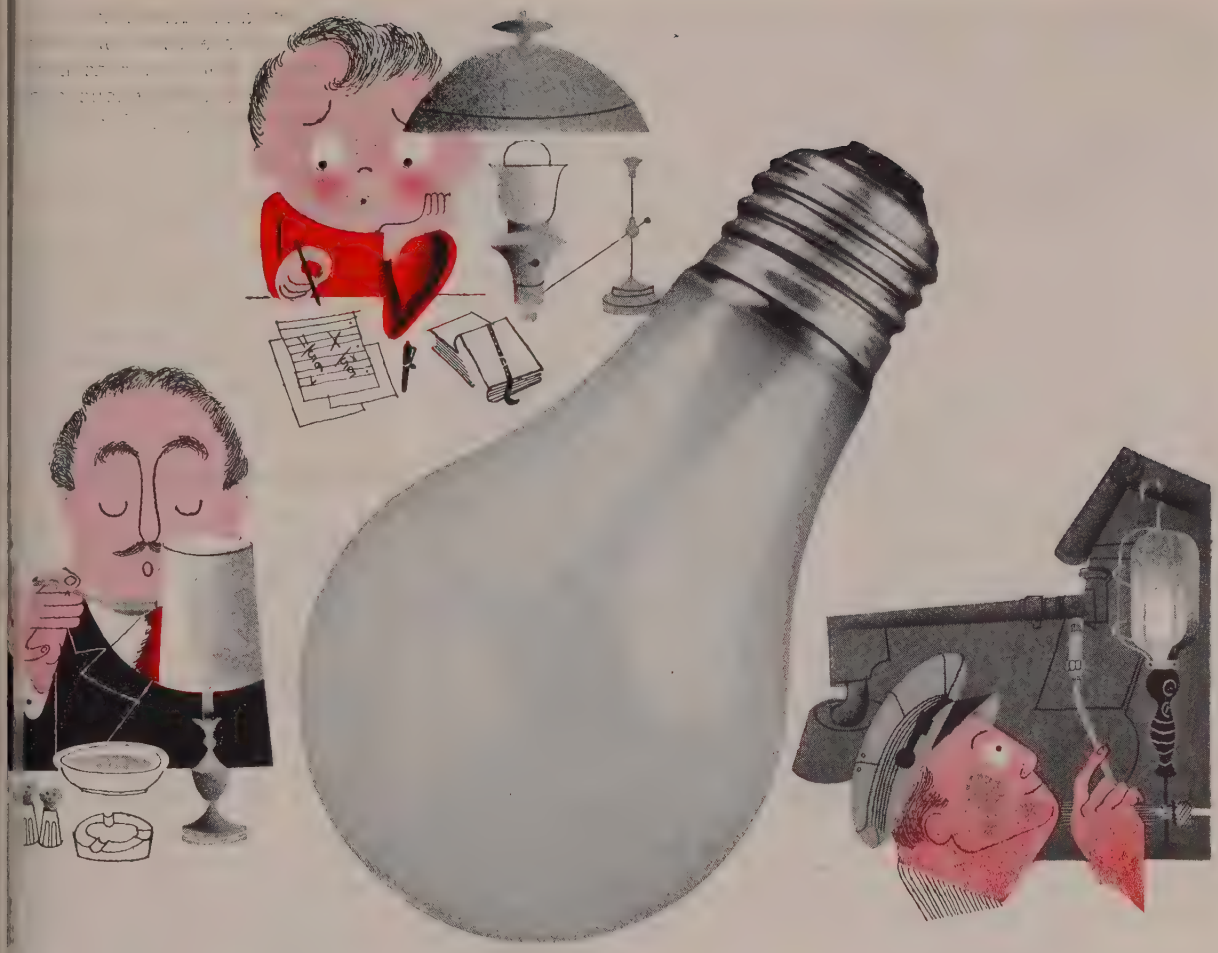
A steel warehouse, specializing in sales of sheet and strip, was opened at 5610 Harrison St., Lawrenceville, Pa., by Connors Steel Warehouse Inc. The firm was organized several weeks ago by Norbert J. and Harry E. Connors.

Gorman Mfg. Changes Hands

Gorman Mfg. Co., Los Angeles, manufacturer of wire wound resistors, was purchased by International Resistance Co., Philadelphia.

Offers German Steel Balls

Frazar & Co. Inc., New York, was appointed as United States distributor of Fischer steel balls, manufactured by Kugelfischer Georg Schafer & Co., Schweinfurt, Germany. The line includes chrome steel and stainless steel balls and sundry balls made of brass, bronze,



...and in any location

REX HIGH SPEED STEEL *is always the same, too*

Crucible's REX High Speed Steels are the same no matter where or in what form you buy them. That's because their quality is thoroughly checked through every phase of manufacture . . . from melting to the last finishing operation. This persistent attention to quality assures you that all REX High Speed Steels are uniform.

And it's readily available. All Crucible warehouses, which are conviently located throughout the country, are well stocked with REX AA, REX M2 and other grades of this quality brand. Next time you need high speed steels, call Crucible.

WRITE TODAY for the unique Crucible Tool Steel Selector, 9" diameter, in 3 colors — a twist of the dial tells you which tool steel is best for your application. Address your request to Crucible Steel Company of America, Dept. S, Oliver Building Pittsburgh 22, Pa.

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AirKool Die Steel
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SPECIFY YOUR TOOL STEELS BY THESE BRAND NAMES

CRUCIBLE first name in special purpose steels

53 years of Fine steelmaking

TOOL STEELS

CRUCIBLE STEEL COMPANY OF AMERICA · TOOL STEEL SALES · SYRACUSE, N. Y.

Whether your fastener requirements call for special bolts . . . or standard . . . you can get experienced cooperation and service from Buffalo Bolt.

In using Circle B specials . . . you can often simplify product design . . . gain extra holding strength . . . speed assembly . . . and cut your unit costs.

In specifying Circle B standard bolts . . . you get quality built in by modern methods and machines designed to meet your volume demands.

In both cases, you can depend upon the experienced counsel of a concern which is satisfactorily supplying leading industrials known for their purchasing and production efficiency.

Let us discuss and demonstrate to you the many practical advantages of dealing with Buffalo Bolt. Your inquiry will receive our prompt attention.

BUFFALO
BOLT COMPANY
Division of Buffalo-Eclipse Corporation
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PRODUCERS OF CIRCLE B PRODUCTS — BOLTS • NUTS • RIVETS AND SPECIAL FASTENERS

copper, iron, aluminum or cast iron. Fischer balls are used for armatures, valves and pumps as bearings, casters, burnishing balls, gage balls and crushing and grinding balls.

Alpha Steel Co. Organized

Alpha Steel Co., Los Angeles, was formed to distribute hot and cold-rolled sheets and strip, tin plate, black plate, and galvanized sheets. Warren E. Simison is president and John B. Segada vice president.

Distributorship Is Broadened

American Gas Furnace Co., Elizabeth, N. J., manufacturer of heat treating furnaces and equipment, granted additional territory to Hornbruch Associates, Pine Grove Circle, Scotch Plains, N. J. The new territory will extend representation from Glen Falls, N. Y., through metropolitan New York.

Plant To Be Reconditioned

United States Army plans to place the Childersburg, Ala., Ordnance Works in operative condition at a cost of about $64 million. The plant was a major powder producer during World War II.

Binks Mfg. Opens Branch

Binks Mfg. Co., Chicago, maker of spray painting equipment, opened a branch sales office and warehouse at 3527 N. Ninth St., Philadelphia. P. J. Peters is the branch manager.

Hanchett Builds on West Coast

Hanchett Mfg. Co., Big Rapids, Mich., manufacturer of saw and knife machinery and production grinders, is building a factory and warehouse in Portland, Oreg.

McDonald Forms Department

McDonald Bros., Los Angeles construction firm, established a design and engineering department. Russel D. Koons, formerly with the Bechtel Corp., will spearhead this department. George S. Ballew, formerly with Stone & Webster Engineering Corp., will manage Mc-

Donald's service departments for the petroleum industry.

Revcor Moves Plant

Revcor, manufacturer of blower wheels, moved from Chicago to a large plant in Carpentersville, Ill.

Back to School

A METALWORKING lubricant school to provide instruction in wax lubricants was established by S. C. Johnson & Son Inc., maker of wax products, at the firm's Racine, Wis., headquarters.

The school was created to train salesmen in the fundamentals of wax chemistry and in the use of Johnson's new wax cutting fluids and lubricants.

The curriculum consists of lectures and demonstrations in the properties of wax and its use in metal forming, cutting and machining, and piercing and blanking. The proper methods of cleaning also are covered.

The school is conducted by George Boehm, chief sales engineer and merchandiser. The company intends to make this a permanent school, not only to instruct the salesmen of its distributors but for its customers who want to learn more about the properties of wax lubricants.

Association Changes Name

Radio-Television Manufacturers Association, Washington, changed its name to Radio-Electronics-Television Manufacturers Association.

Copes-Vulcan Names Distributor

Copes-Vulcan Division, Continental Foundry & Machine Co., Erie, Pa., appointed C. H. Spencer & Co., Salt Lake City, Utah, as its representative in that territory.

Packer Machine Builds Addition

Packer Machine Co., Meriden, Conn., doubled manufacturing space with a new addition to handle

FOR THE VERY BEST
See ATLAS
TRANSFERS - SCALE CARS
COAL CHARGERS - COKE QUENCHERS
60-TON BOTTOM DUMP ORE TRANSFER CAR

This is one of the latest Atlas Transfer Car designs arranged for modern hydraulic operation. It provides close control of the discharge and eliminates freezing of air lines in the winter. A hydraulically operated pusher arm is provided of the latest horizontal telescoping type. The brakes also are hydraulically operated and apply automatically if pressure is low or if power fails.

At this plant the car must cross over to the coke track to shift coke cars. There is no conductor rail on the coke track so the car is equipped with a motor-driven cable reel attachment, enabling it to perform this switching function. When operating on the cable reel the collector shoes are cut out and automatically raised off of the conductor rails. The cab is overhung to give the operator a line of vision down the side of the car.

THE ATLAS CAR & MFG. CO.
ENGINEERS and MANUFACTURERS
1100 IVANHOE ROAD CLEVELAND 10, OHIO

more orders for the firm's industrial buffing and polishing machines.

Electro-Nite Carbon Expanding

Electro-Nite Carbon Co., Philadelphia, manufacturer of carbon brushes, bearings, seal rings and other carbon products, is constructing a plant at Torresdale avenue and Strahle street, Northeast Philadelphia, Pa. The company will more than double its production area and substantially increase its laboratory and testing facilities through this expansion program.

Distributor Adds Alloy Bars

Addition of alloy bars to its present stock has been announced by Tube Distributors Co. Inc., supplier of commercial and aircraft quality alloy, stainless and carbon steel tubing and boiler tubes. The company moved its offices, stock and processing machinery into a new warehouse recently completed in Garden City, N. Y.

Singleton, General Supply Merge

Singleton Co., manufacturer of electrochemical equipment, merged with General Supply Co., distribution organization. Offices of the firm are located at 5317 St. Clair Ave., Cleveland. Officers of the manufacturing firm are: Albert Singleton, president; E. F. Buescher, vice president; T. R. Gill, treasurer; G. A. Singleton, secretary.

Pennsalt Opens $8-million Plant

Pennsylvania Salt Mfg. Co.'s new $8-million electrolytic chlorine and caustic soda plant at Calvert City, Ky., is now in production. The plant is part of the firm's $12-million expansion program which also includes construction of a synthetic ammonia unit at Wyandotte, Mich.

Enters Metal Parts Field

Prudential Industries Inc., Doylestown, Pa., which formerly specialized in textile products, will enter the field of manufacturing precision metal parts for the electronics, aviation and other industries. The company has been reorganized with Oliver J. R. Troup elected as president and John Troup as treasurer. Under the reorganization program, Atlas Chain & Mfg. Co. and Atlas Metal Stamping Co., Philadelphia, were consolidated and are now divisions of Prudential Industries. Due to the specialization in fine precision parts, Atlas Metal Stamping in the future will be known as Atlas Precision Products Co., division of Prudential Industries Inc.

Foundry Issues Directory

Cooper Alloy Foundry Co., Hillside, N. J., is distributing a pocket size directory giving the names street addresses and phone numbers of its 32 stainless steel valve and fitting distributors and their numerous warehouse locations.

Worthington Names Agent

Worthington Corp., Harrison, N. J., signed a distributorship agreement with Poe Co., Detroit, authorizing the company to sell, install and service Worthington's line of vertical turbine pumps.

Frostrode Moves Departments

Viking Products Co. Inc., Vicksburg, Mich., moved its Frostrode Division's sales, special engineering and new development departments to 3066 E. Outer Dr., Detroit. Frostrode makes packaged mechanical refrigeration for temperature control of industrial liquids.

Mylamaque Minerals Organized

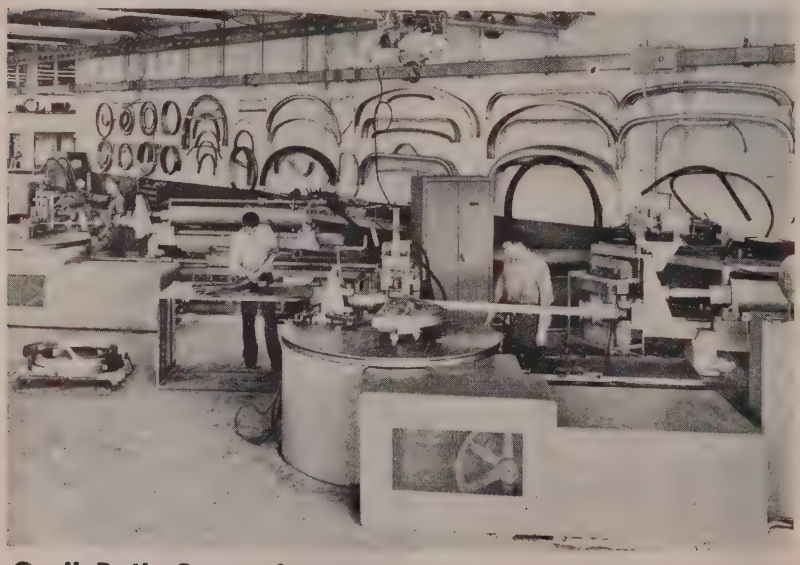
Mylamaque Minerals Inc., with a capital of $1 million, filed papers of incorporation in Buffalo. The new company will be a wholly-owned subsidiary of New Mylamaque Exploration Co. Ltd., Toronto, Ont., which plans acquisition of mineral properties in the United States at undisclosed locations.

Hewson Names Representative

John Hewson Co., New York, appointed H. E. Ransford Co., Pittsburgh, as its representative for sales, field application and servicing of its line of insulation test sets, static control and alarm systems.

Hallicrafters Builds in Canada

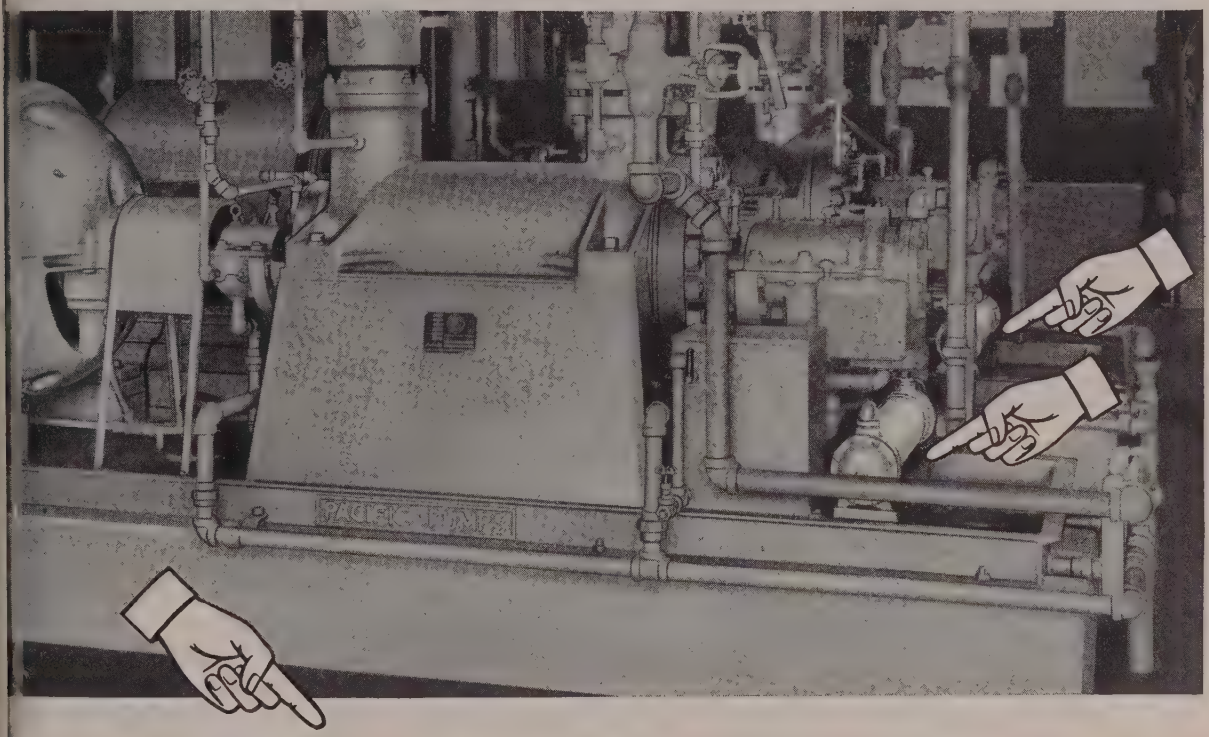
Construction of a $400,000 manufacturing plant for Hallicrafters Canada Ltd. has been started in Toronto, Ont. The structure will have 42,000 sq ft of floor space and is scheduled for completion



Cyril Bath Opens $2-Million Plant

Cyril Bath Co.'s $2-million plant in Solon, O., was carefully laid out to facilitate an orderly flow of material and operations. Eight overhead rail cranes handle up to 25-ton loads. The Metal Forming Division is shown above, producing components for aircraft, automotive, railroad and other industries. Bath's other division produces its contour formers, tangent benders, power press brakes, tools, dies, special machinery. Total plant area: 50,000 sq ft

bearings are never "thirsty" for properly cooled lube oil in these Pacific boiler feed pumps



ROSS EXCHANGERS make sure of that!

Delivering 480,000 lbs. of boiler feed water hourly at 295° F against a discharge pressure of 1222 psi, each of these Pacific Type ABF Boiler Feed Pumps has been *"fabricated from materials selected for specific functions."*

To hold lube oil temperatures under close control—Pacific Pumps, Inc., one of the Dresser Industries, factory-installs Ross Type BCF *all copper and copper alloy* Exchangers. Pressure lubricated radial and thrust bearings are never "thirsty" for properly cooled lube oil. They *always* have enough. *Overheating is effectively ... dependably ... prevented!*

Petroleum refineries, industrial and public utility power plants all benefit from the built-in temperature protection of Ross Exchangers—not only in Pacific and *other* leading make pumps, but in *many* types of primary equipment: engines, compressors, turbines, hydraulic equipment, speed increasers, transformers and commercial vehicles.

Why? Pre-engineered, fully standardized Ross Type BCF Exchangers have an unrivaled reputation for ruggedness and reliability. More information is in Bulletin 1.1K5. Write for your copy.

KEWANEE-ROSS CORPORATION
DIVISION OF AMERICAN RADIATOR & STANDARD SANITARY CORPORATION
1431 WEST AVENUE • BUFFALO 13, N. Y.
In Canada: Kewanee-Ross of Canada Limited, Toronto 5, Ont

ving home and industry: AMERICAN-STANDARD • AMERICAN BLOWER • CHURCH SEATS & WALL TILE • DETROIT CONTROLS • KEWANEE BOILERS • ROSS EXCHANGERS

later this year. The plant will have daily output of about 200 television receivers and 400 radio and communications transmitters and receivers.

Brunner Mfg. Co. Expanding

Directors of Brunner Mfg. Co., Utica, N. Y., approved a $1.5-million bond issue and 100,000 additional shares of common stock to finance an expansion program and provide added working capital. Albert G. Zumbrun, president, says more than $1 million of the amount to be raised will be used to pay for the new plant which Brunner is erecting in Gainesville, Ga.

Power Shovel Firm Names Agent

Marion Power Shovel Co., Marion, O., appointed Kern-Limerick Inc., Little Rock, Ark., as its distributor in that area.

Fruehauf Increasing Production

Fruehauf Trailer Co., Detroit, expects to jump the present 80-man work force at its Westfield, Mass., plant to about 200 within the next month. The payroll may eventually push up to the 300 mark. The Westfield plant was taken over recently by Fruehauf to manufacture aluminum trailers.

Willys Enters New Field

Electronics Division, Willys Motors Inc., Toledo, O., is entering the television transmitter manufacturing business. A prototype transmitter, now in production, is expected to be ready for submission to the Federal Communications Commission, Washington, for approval in about two months.

Russell Pipe Plans To Rebuild

Russell Pipe & Foundry Co., whose plant at Alexander City, Ala., was destroyed by a $500,000 fire last May, will rebuild. The company produces cast iron soil pipe and gray iron fittings.

Freyn Moves to Pittsburgh

Headquarters of Freyn department, Engineering & Construction Division, Koppers Co. Inc., moved from Chicago to Pittsburgh. Dr. Walter H. Mathesius, a Freyn consultant, will continue to have his offices at 109 N. Wabash Ave., Chicago, as will several members of the Freyn sales force and the entire engineering department. Koppers purchased the Freyn Engineering Co. in 1949 and it now operates as a department of Koppers Engineering & Construction Division. Freyn designs and constructs blast furnaces, open-hearth furnaces, sintering plants, continuous casting machines and much other equipment for the steel and allied industries.

Alloy Rods Names Distributors

Alloy Rods Co., York, Pa., manufacturer of alloy arc welding electrodes, appointed as distributors: Rayno Distributors Inc., Brooklyn, N. Y.; Virginia Welding Supply Co., Charleston, W. Va.; Hobart Bros. Sales & Service, Minneapolis; Cottet's Welding Supply Co., Syracuse, N. Y.

Cleveland Headquarters Opened

New headquarters for Euclid Industrial Design Co., Euclid Tool Engineering Co. and Euclid Tool Sales Co. were established at 1483 Euclid Ave., Cleveland 12.

Foster Opens Los Angeles Office

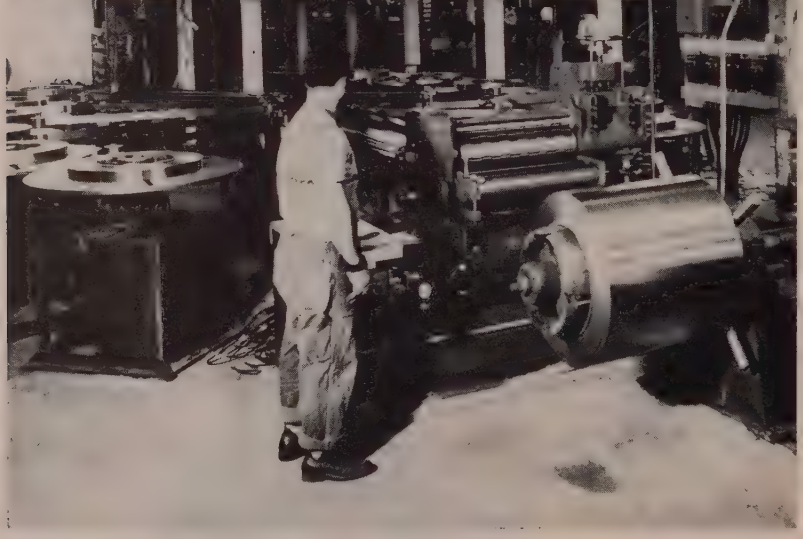
L. B. Foster Co., distributor of steel sheet piling, pipe, tubing and welding supplies opened an office at 4360 Wilshire Blvd., Los Angeles, under the direction of Henry E. Fleishman, formerly general manager of the Chicago office.

Parker Appoints Distributor

Parker Appliance Co., Cleveland, appointed as distributors of its O rings: Palmer Supply Co., Seattle, and Bearing Distributors Inc., Pittsburgh.

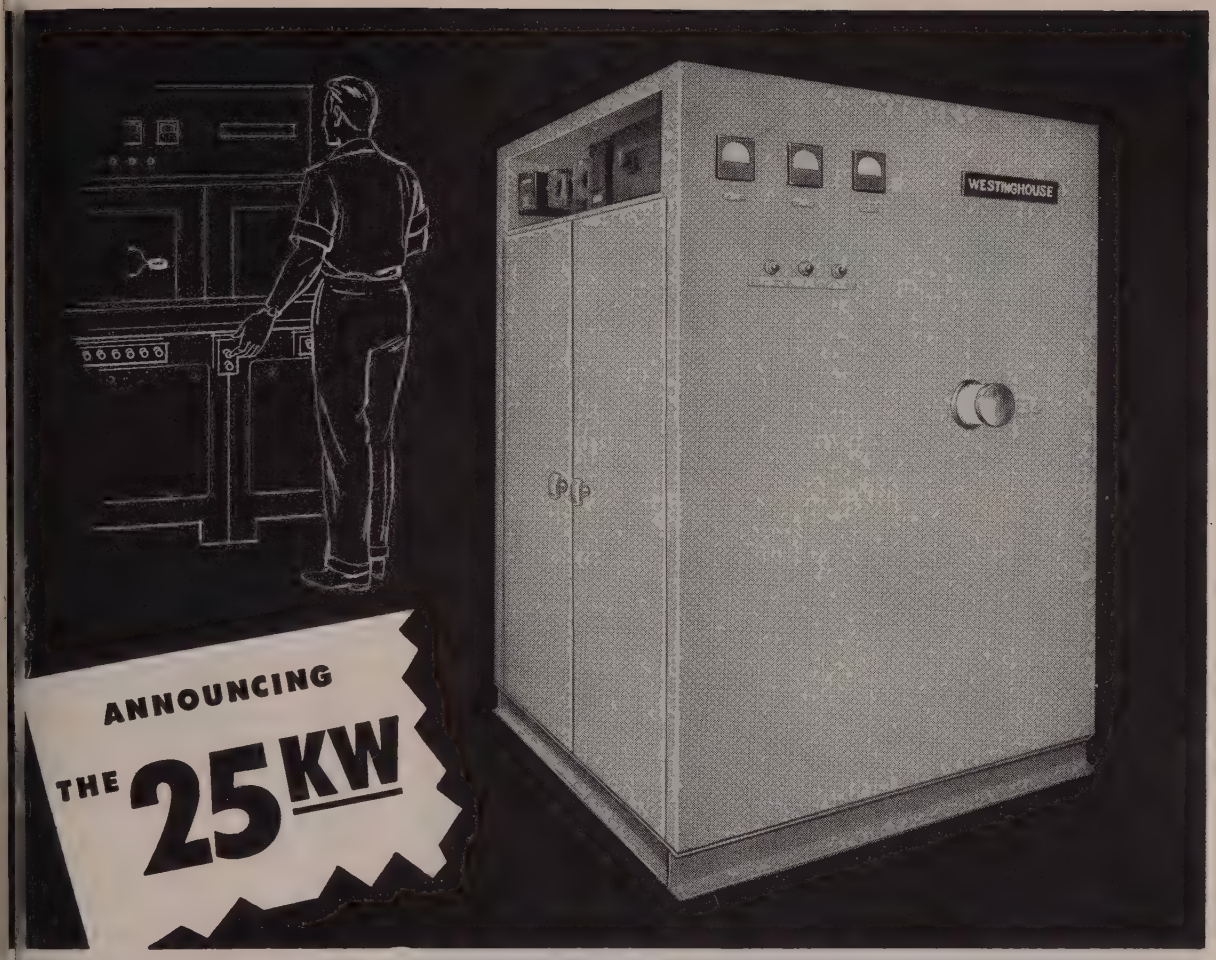
Tool Firm Moves Headquarters

Deluxe Saw & Tool Co., a subsidiary of Rockwell Mfg. Co., Pittsburgh, is transferring its national headquarters and out-of-state manufacturing facilities from Chicago and Columbus, O., to its plant in High Point, N. C. New machinery, equipment and personnel are being added to the High Point plant "as quickly as possible," says W. F. Rockwell Jr., president of the parent company. Deluxe, which makes carbide-tipped circular saws



Rodney Metals Installs Precision Slitter

A new 25-in. precision slitter, shown above, was installed at Rodney Metals Inc.'s plant in New Bedford, Mass. The slitter is especially designed for light gage metals. It has a unique rewinding arrangement to assure better coils and edges; each slit strip has its own take-up and tension controller



NEW HF INDUCTION HEATING GENERATOR

PUTS FULL POWER INTO A WIDER VARIETY OF LOADS

Westinghouse now presents a new high-frequency generator with 25 KW output at 100% duty cycle. For optimum performance, the new 25 KW has a tank kva of 1620. This means you can now put full power into a wider variety of loads . . . even where close coil coupling is impractical. Non-ferrous materials, like brass, copper and aluminum, can be heated in much shorter time. You benefit in higher production rates at lower costs.

This latest addition to the Westinghouse line of induction heating tools has many more outstanding benefits. Here are some of them:

- Allows positive, precise heat control of short production runs on a variety of jobs . . . or long production runs with rapid heat cycles. The built-in electronic keying of power output that makes this possible also eliminates main contactor arcing.
- Provides smooth variation of power output from 25% to 100%. This simplified power output system utilizes dependable, maintenance-free saturable reactors and longer-life, cost-cutting diode rectifier tubes.
- Gives complete protection against condensation and water-impurity troubles. The built-in distilled water cooling system and heat exchanger offers substantial raw water economy, too.
- Assures long tube life, peak performance and minimum maintenance by close regulation of filament voltages.
- Offers easy inspection and maintenance through the full-opening double doors; easier operation through a simplified combination of conveniently located controls.

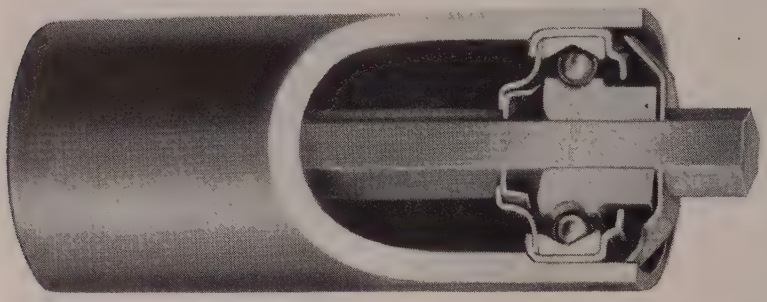
The new Westinghouse 25 KW RF Generator is available now in this de luxe model. A standard model is also available with electronic keying and smooth power output control features as easily-installed optional accessories. Both models offer flexible, economical handling of hardening, annealing and metals-joining jobs. For full information write: Westinghouse Electric Corporation, Electronics Division, Induction Heating Section, 2519 Wilkens Avenue, Baltimore 3, Maryland.

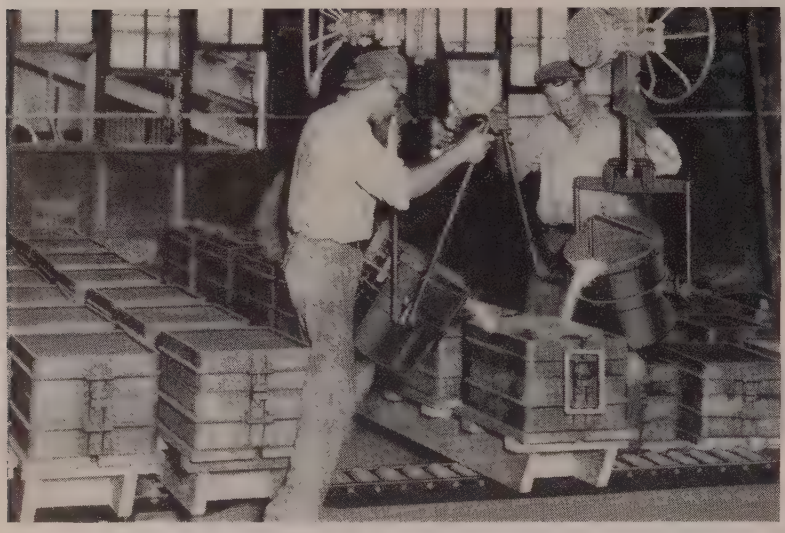
YOU CAN BE SURE...IF IT'S **Westinghouse**

J-02270

STANDARD'S SHIELDED BEARINGS

Are Expressly Designed for Foundry Conveyor Service





Every Standard roller conveyor is equipped with specially designed bearings that provide the maximum of protection and durability in foundry service. Spillage of hot iron is guarded against by special steel shields. These convex shaped shields fit into the ends of rollers to repel foreign matter. An exit for small particles is provided by an opening at bottom of shield.

Foundry conveyors are designed and built in their entirety by Standard—in a wide range of sizes, weights and types. You can depend on Standard for the right conveyor for your needs — we have been designing and building foundry conveyors since 1906.

STANDARD CONVEYOR COMPANY
General Offices: N. St. Paul 9, Minn.
Sales and Service in Principal Cities

Engineered Conveyor Systems • Portable Conveyor Units • Spiral Chutes • Pneumatic Tube Systems

Send for Standard's special catalog, ST-83, "Conveyors for Foundries"—a valuable reference book illustrating and describing conveyor installations in leading foundries.

Standard
GRAVITY & POWER
CONVEYORS

ENGINEERED FOR LOW-COST PRODUCTION

blades and other tools, will maintain its plant location at 2476 Blue Island Ave., Chicago, as a service and repair center and midwest sales headquarters.

Offers Sheet Mills

ALAN WOOD STEEL CO., Conshohocken, Pa., is offering for sale three sheet-rolling mills which are "in excellent condition, completely equipped and ready to operate."

The equipment is part of Alan Wood's Schuylkill Iron Works which recently ceased rolling operations. It includes a single-stand mill, installed in 1937, which has a production rate of 50 tons per eight hours; a two-stand mill, installed in 1927 and capable of producing up to 60 tons in eight hours; and another two-stand mill, installed in 1926, with a capacity up to 110 tons in eight hours.

In addition to the three mills, the company is offering for sale other miscellaneous sheet-mill equipment, such as shears, furnaces, levellers, tables and picklers.

Kaiser Aluminum Names Agent

Hanna Steel Corp., Birmingham was appointed Alabama distributo by Kaiser Aluminum & Chemica Corp., Oakland, Calif. Hanna is in stalling special equipment in major addition to its facilities.

Gyroscope Production Rising

An arrangement whereby th smallest rate gyroscope will b made avialable for the first tim on a mass production basis at vo ume prices was announced jointl by United States Time Corp., Wa terbury, Conn., and Sanders As sociates Inc., Nashua, N. H. Unite States Time Corp. expects to star full scale production of the gyro scopes in its main plant at Middle bury, Conn., before the end of th year. The instrument measure less than 1 in. in diameter, les than 2 in. in length, and weigh less than 3 oz. Sanders will con

nue research, development and lot production at Nashua.

ys Marine Hardware Firm

Charles A. Oliver Co., Middleille, N. Y, purchased the mainery, stock and name of E. J. illis Co., New York, manucturer of marine hardware. dded plant facilities in Middleille have been leased, and remoding operations are under way.

erling Appoints Agents

Sterling Engineering Co., Lacoa, N. H., a subsidiary of Amerin Machine & Foundry Co., New ork, appointed as agents for the mpany's line of electrical relays: m S. Dewson, Chicago; J. O. hmitz, Kansas City, Mo.

strument Firm Opens Branch

Federal Products Corp., Province, R. I., opened a branch sales ffice in the Colonial building, ayne, Pa., under the manageent of John E. Laffey. Federal akes precision measuring instruents.

rger Mfg. Appoints Agent

Berger Mfg. Division, Republic eel Corp., Canton, O., appointed odern Kitchens Inc., Washington, distributor of Republic steel tchens. More than $1 million was ent in retooling Berger's No. 2 ant in Canton where the product fabricated.

ill Make Titanium Castings

National Research Corp., Camidge, Mass., signed a contract for lot production of titanium cast apes for the United States Army dnance at Waterbury Arsenal, aterbury, N. Y. The contract is e first awarded to a non-federal ency to produce titanium shape stings.

points West Coast Agent

United States Air Conditioning rp., Minneapolis, appointed Norn S. Wright & Co., San Franco, Seattle and Portland, Oreg., its representatives to handle its ating, ventilating and air condining equipment.

AMERICAN CHEMICAL PAINT COMPANY

AMBLER CHEMICALS ACP PROCESSES PENNA.

Technical Service Data Sheet

Subject: HOW GRANODRAW PHOSPHATE COATING FACILITATES COLD EXTRUSION OF STEEL

INTRODUCTION

By phosphate coating steel, prior to cold working it, extrusion, drawing, and other forming operations are greatly improved. In fact, it is the protective zinc phosphate coating that makes for the successful cold deformation of steel.

The tremendous pressures that most forming operations require produce extremely high frictional contact between die and metal. Without a protective coating, excessive galling (welding) of dies, breakage of tools, and unduly short die life will result. The combination of a non-metallic crystalline phosphate coating with an adsorbed lubricating film, possesses a low coefficient of friction while maintaining its stability under extremely high deforming pressures. This combination, therefore, greatly minimizes the aforementioned tool difficulties.

THE COLD EXTRUSION OF GENERATOR FRAMES

Cold extrusion is now being used advantageously in the manufacture of high production generator frames. This operation is facilitated by careful preparation and proper coating of the frame blank which is made from SAE 1010 open hearth plate steel.

After wheelabrating to remove the scale, the blank is rolled up and then fed automatically through a six stage dip wheel type washing machine which cleans the surface and applies the coating. The frame is then fed into an extrusion press where the wall thickness is increased on one end and reduced 47.5 percent on the other end. This operation produces concentric frames of uniform thickness and correct dimensions.

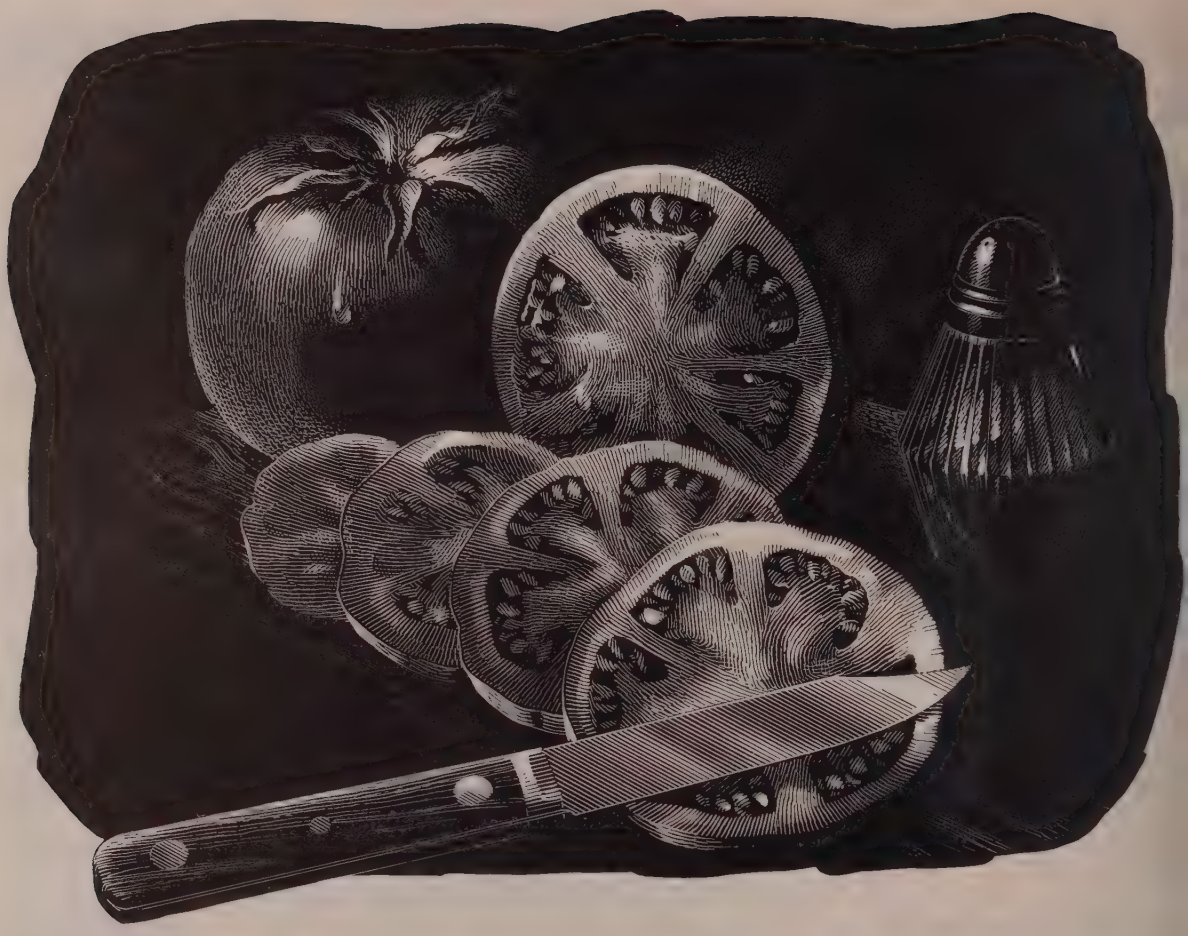
The Granodraw coating produces the proper surface to receive the lubricant by furnishing an extremely adherent film with the proper crystal size and continuity of coating required to insure maximum adsorbsion and tenacity by the lubricant. The lubricant, Montgomery DF 1101, is a combination of titre alkali soaps and resins. It is a powder which when dissolved in water and redeposited on the phosphate coated work piece, produces the necessary surface for subsequent operations. This film is dry and considerably less hydroscopic than similar coatings of the soap type. The concentrations of both the Granodraw and DF 1101 are maintained by simple chemical analysis.

PROTECTIVE COATING SEQUENCE

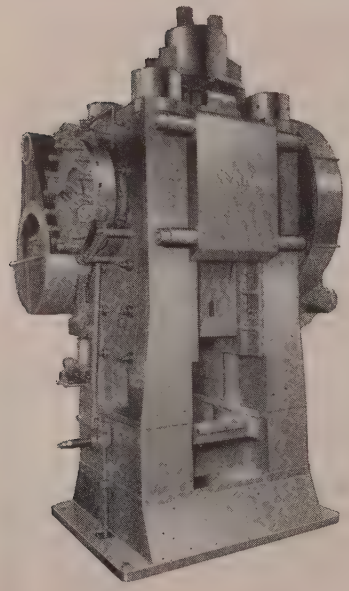
Stage	Operation	Chemical	Time	Temperature
1	Load and unload			
2	Cleaning	Tri-sodium phosphate and soda ash	1 Min.	180° F
3	Water rinse		1 Min.	180° F
4	Zinc phosphate coating	"Granodraw"*	4½ Min.	165° F to 180° F
5	Water rinse		2 Min.	180° F
6	Lubricating	H.A. Montgomery lubricant DF 1101	4½ Min.	190° F

*Trade Mark of the American Chemical Paint Company

CHEMICALS ACP PROCESSES



Are Tomatoes Safe to Eat?



Vitamin-conscious contemporaries may smile at the question, but a few generations ago people refused to eat tomatoes because they were believed to be poison. Our ancestors denied themselves the health-giving qualities of this now popular vegetable because they clung to a mistaken idea.

This is no more peculiar, however, than a modern manufacturer who clings to old concepts of production. Failing to utilize press economies just because the part in question has always been cast or cut from solid is denying a business the healthful benefit of lower costs.

Why not re-examine your productive processes—now? If you're making large numbers of identical items out of metal, it's almost certain that modern press methods can cut your costs. Ask us to help you survey the possibilities. It costs you nothing to consult us. Call on Clearing Machine Corporation today.

CLEARING MACHINE CORPORATION

6499 WEST 65TH STREET • CHICAGO 38, ILLINOIS

HAMILTON DIVISION, HAMILTON, OHIO

CLEARING PRESSES THE WAY TO EFFICIENT MASS PRODUCTION

Technical Outlook

STATION KAISER— Two-way radio co-ordinate material transfer along 55 miles of standard gage railroad track at Kaiser Steel's 1600-acre mill at Fontana, Calif. System includes 12 radio-equipped diesel locomotives in direct contact with three base stations—yardmaster's office, ingot scales and open-hearth pit office. Yardmaster's pickup truck, a general maintenance truck and a track maintenance truck also are in the circuit.

FLAME STRAIGHTENING—A fire in an Alameda, Calif., warehouse that had a welded-steel frame caused deflections up to 10 inches in beams spanning 60 feet. Straightening was accomplished in ten days by heating v-shaped wedges in webs and flanges, then following up with a quick quench, using wet burlap. On cooling, heated portion contracted more than it expanded, causing the member to return to its original position. Judson Pacific-Murphy Corp., Emeryville, Calif., did job.

WRAPS OFF—HAE coating for magnesium, developed at Frankford Arsenal, continues to give top notch performance in corrosion tests. Under wraps for a while, the process recently has been declassified for general use. The electrolytic treatment can be applied to all magnesium alloys including the rare earth magnesium type. The coating has corrosion, heat and abrasion resistance and is a good paint base. Army ordnance claims the finish really has what it takes to stand up under tough conditions.

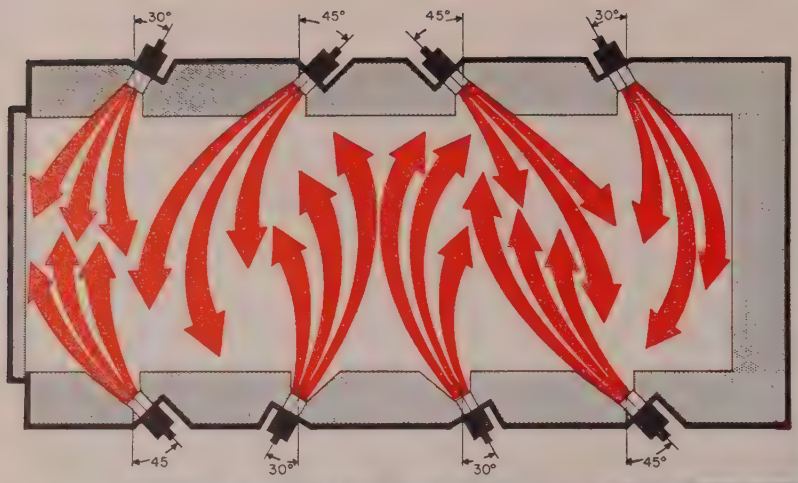
COLD GALVANIZE—A new zinc-rich coating gives corrosion protection comparable to galvanized or zinc plated coatings. Effectiveness depends on electronic contact maintained by zinc particles when present in sufficient quantity in the paint coating. Secret: Zinc content must be 93 to 95 per cent minimum. Development is an outgrowth of research on electrochemical nature of corrosion at Cambridge (England) Metallurgical Laboratory. Sealube Co., Wakefield, Mass. has christened it ZRC for sale in this country.

GOOD TO THE LAST DROP— Cold shots and resulting defective aluminum castings that go with use of conventional ladles are said to be eliminated by a crucible-ladle with a coffee-pot lip that extends under the metal line. Codeveloped by Electro Refractories & Abrasives Corp., Buffalo, N. Y., and Bohn Aluminum & Brass Corp., Detroit, the unit keeps metal temperature at 1385°F.

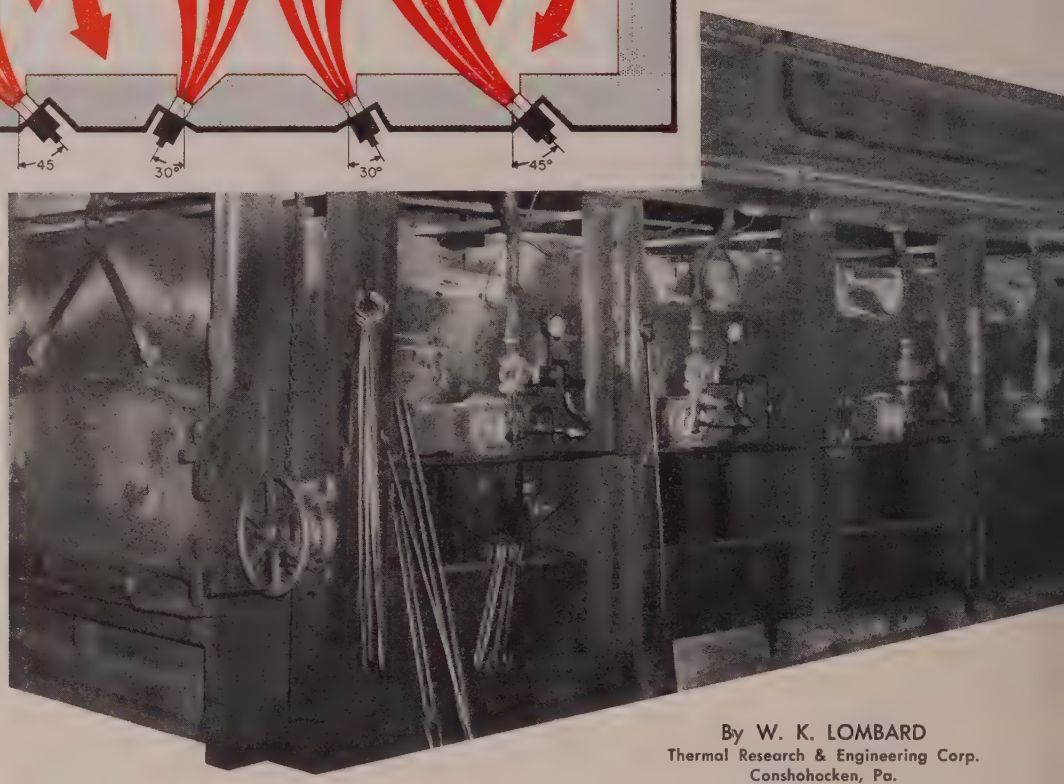
HERE TO STAY— After nickel restrictions are lifted, look for a new grade of chromium-manganese-nickel stainless to take its place among the old reliable 300 and 400 series. Best guess is that it will contain 3 to 4 per cent nickel. Producers are looking for more tonnage of the austenitic type. They know that good austenitic stainless for many structural uses can be made with less nickel than required for 18-8 if they add manganese. And more high purity manganese will be coming along to help.

WHAT'S ON THE INSIDE—Annealing furnace burners that work on the jet-engine principle step up heat convection without mechanical aid. Heat release per burner is 300,000 Btu's per hour. Details are on p. 80. . . There are a lot of ways to surface-finish stainless steel. These suggestions, in picture-story form, cover just about all the bases, p. 82. . . Of course you'll want to get the latest facts and figures on electric steelmaking. Here's a field that might, in time, put open-hearths out of business. Story's on p. 84. . . If you're involved in bulk materials handling you'll appreciate the story on p. 110, which takes you through Harbison-Walker's new refractories plant, a model of automaticity and cleanliness. . . How induction melting can offset higher first costs in brass and bronze melting is another idea-provoker, on p. 100.

Metalworking Outlook—p. 31 Market Outlook—p. 115



By mounting the burners in the ang lar plan shown at left, two count rotating patterns of circulating ga are set up. Problem of heating ce ters and outsides of coils at a u form rate was eliminated when burners were used on furnace bel



By W. K. LOMBARD
Thermal Research & Engineering Corp.
Conshohocken, Pa.

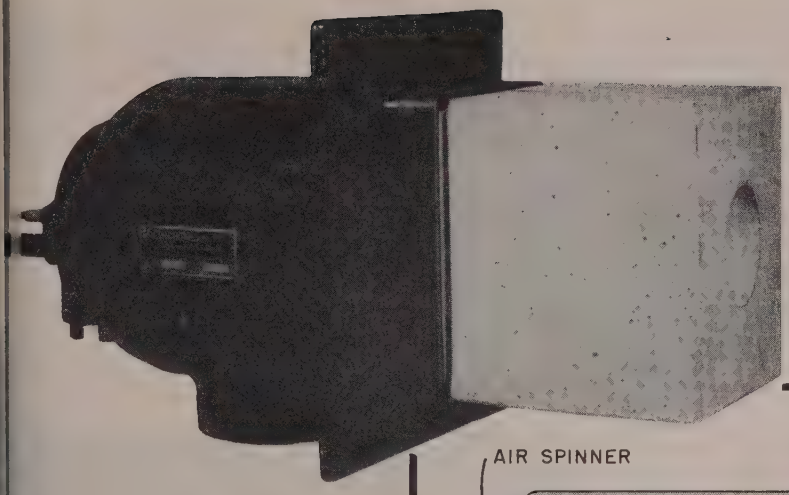
Jet Principle Blasts Annealing Troubles

New high-velocity burner design steps up circulation in the furnace without mechanical means. It's able to develop more heat release per unit of combustion, too

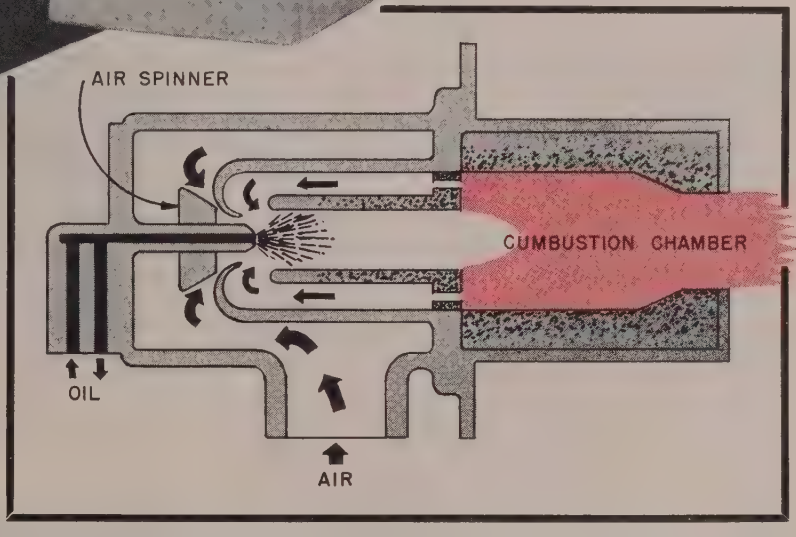
A PAGE out of the jet engine designers' book is helping to solve the problem of even heat convection in a batch-type annealing furnace at a large Eastern mill. They treat mostly coils of ⅜-inch austenitic stainless steel rod, and problem was to keep outside and inside coils from heating at different rates.

Increased furnace circulation was seen as the easiest solution, but doing it mechanically was prohibitive at the 1900° F operating temperatures. A recently developed burner, designed by Thermal Research & Engineering Corp., Conshohocken, Pa., to give exit velocities of as much as 10 times the normal, was tried and results look promising.

Burner Design — Based on the principle that a liquid fuel mu first be vaporized before it can burned rapidly, this feat is acco plished in the burner by utilizi a small portion of the heat of co bustion itself. Internal design pe mits recycling of the products combustion to the throat of t venturi by means of the low pre sure zone created at that point the primary air. Fuel is inject



Combustion lessons learned in jet engine developments have been applied to the new burner design. Result is a heat release of 300,000 Btu's per hour at average fuel consumption of 17 gph of No. 3 grade fuel oil



rough a pressure atomizing noz- at this point so that hot prod- ts of combustion are immediately ought into contact with atom- d oil where vaporization takes ce. No secondary air is needed. Flame holder maintains flame bility so that combustion takes ce about 85 to 90 per cent with- the confines of the burner block combustion chamber. Flame gth is about 6 inches, and since e heat release rate is so high, out 10 million Btu per hour per ic foot of combustion volume... t velocity is also very high, out 300 fps. This jet effect is the rce of the high rate of gas cir- ation within the furnace.

Installation Easy—At this par- ular application, rework was to kept to a minimum, so the same ner locations were employed. ese consisted of four equally ced burners on each side, fir- directly into the heating cham- . There is one important dif- ence, however . . . . the high ocity burners are mounted at gles.

Thus, two counter-rotating pat- ns of circulating gases are set The high rate of circulation is obtained is found ample to vide the desired uniformity of °F not only on the outer por- ns of the coils of rod, but down ide the coil where wall radia- n effect was shielded and where main source of non-uniformity l occurred.

Since the burners were sealed without secondary air entrances, was also found that the furnace gen content could be held to the desired 2 to 3 per cent with the resultant large reduction in scaling.

Production Efficiencies — The eight burners each develop 300,000 Btu per hour at an average fuel consumption of 17 gph of No. 3 grade fuel oil. An interesting effect of the use of high velocity burners is that horsepower put into the combustion air blower is nearly entirely recovered in the form of air horsepower into the furnace.

Calculations have been made which indicate that convection heat transfer coefficients four times those experienced in similar furnaces using conventional burners can be expected in the center of the furnace. For the wall radiation conditions in the furnace being discussed, this can mean a production increase of 15-20 per cent.

Production increase of over 50 per cent was made available in this case, partially due to the above described convection heat transfer and partially due to higher total heat input possible without danger of flame impingement or poor combustion. The latter is impossible because the flame length is so short and concentrated.

Jet Analysis—Heat transfer results obtained in the furnace described above can be justified by a brief examination of the conditions present in the jet of hot gases issuing from a high velocity burner of the type used. More correctly, this is a combustor, since it is a burner and combustion chamber combined.

Condition of jet gases at turbulent flow discharging into a zone of relatively stagnant gases, the two being assumed to be of the same density, has been investigated and shown to offer the following equation of velocity in the jet as a function of the distance x from the nozzle:

$$V = \frac{V_o D_o}{0.22\,X}$$

The above does not take into account the large volume of gases recirculated by the ejector action of the high velocity jet.

Surface Finishing Stainless Steel

For mirror-like finishes, polish and buff stainless steel. Start rough grinds with No. 60 grit. Good buffing practice begins with about No. 180 grit abrasive

POLISHING and buffing highlight the beauty of stainless steel.

To polish, start rough grinds with No. 60 grit. Uneven or rougher work may require No. 36 grit. Succeeding steps call for progressively finer aluminum oxide grits.

Hard-to-get-at parts may require electropolishing which, in theory, is the opposite of electroplating. Work is the anode and metal is removed instead of added. One method employs a citric and sulphuric acid solution or a glycolic and sulphuric acid solution as electrolyte; the other uses butyl alcohol and phosphoric acid.

Buffing—Standard practice is to begin with about No. 180 grit abrasive. Loose, resilient, soft fabric buffs are required. Fine aluminum oxide abrasive and lubricant are applied by holding a stick or cake of combined abrasive and lubricant against the rotating wheel.

Mill Finishes—Thin pieces less than 24 inches wide are strip. Wider pieces are called sheet. Each have mill finish numbers.

No. 2-D sheet has a dull, cold-rolled surface. No. 2-B sheet or No. 2 strip are cold rolled but brighter. The No. 4 finish, obtained by polishing sheets, is not extremely reflective. Tampico-brush finish on sheets, designated as No. 6, has a dull appearance, like No. 2-D, but its texture is more uniform and delicate.

Highest polish you can give to sheet is the No. 7 finish, which is mirrorlike. Such expressions as "satin finish" are used to describe surface finishes applied by the fabricator to made-up parts and assemblies.

At start, hold wheel crosswise to weld, barely taki off top of bead; then turn wheel parallel to the we

Continuous belt grinders are handy to weld grind sm parts. To conceal weld here, refinish entire assem

ARMCO STEEL SPECIFICATIONS FOR GRINDING AND POLISHING

PURPOSE	ABRASIVE	LUBRICANT	TYPE	WHEEL SIZE, INCHES	SPEED in SFM
Weld Bead Grinding	Aluminum Oxide Grit No. 40-60	Dry	Rubber or Bakelite Bonded	4-8	4000-6000
First Operation on Number 1 Finish	Aluminum Oxide Grit No. 60-80	Tallow or Grease Stick	Shop-Headed or Factory-Coated (Wheels or Belts)	12-14 S 5-6 P	6000-8000
First Operation on No. 2D or 2B Finish	Aluminum Oxide Grit No. 80-100	Tallow or Grease Stick	Shop-Headed or Factory-Coated (Wheels or Belts)	12-14 S 5-6 P	6000-8000
Final Operation to Secure No. 4 Polish	Aluminum Oxide Grit No. 150	Tallow or Grease Stick	Shop-Headed or Factory-Coated (Wheels or Belts)	12-14 S 6 P	6000-8000
Final Operation to Secure Tampico Brush Finish	Pumice, Lime or Silica Flour	Oil and/or Kerosene	Tampico Brush	8-16	2500-5000

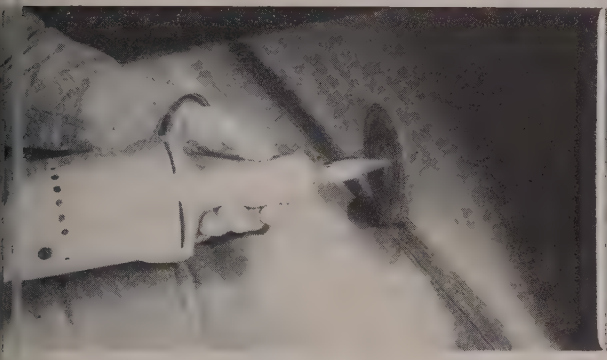
Note: Always follow a sequence of operations, raising finish by no more than forty grit size numbers each time.

S—For stationary machinery.
P—For portable machinery.

WELD BEAD FINISHING

You can remove all signs of welded joints by using correct finishing techniques. First snag down the bead

Carbide burrs help snag down awkward corners. Disc sanders can be used, but further finishing is required



With wheel parallel to weld, grind bead almost flush. Take special care to avoid gouging the metal alongside

After rough work, change wheel to finer grit number. When bead is flush, grind parallel to the grit lines

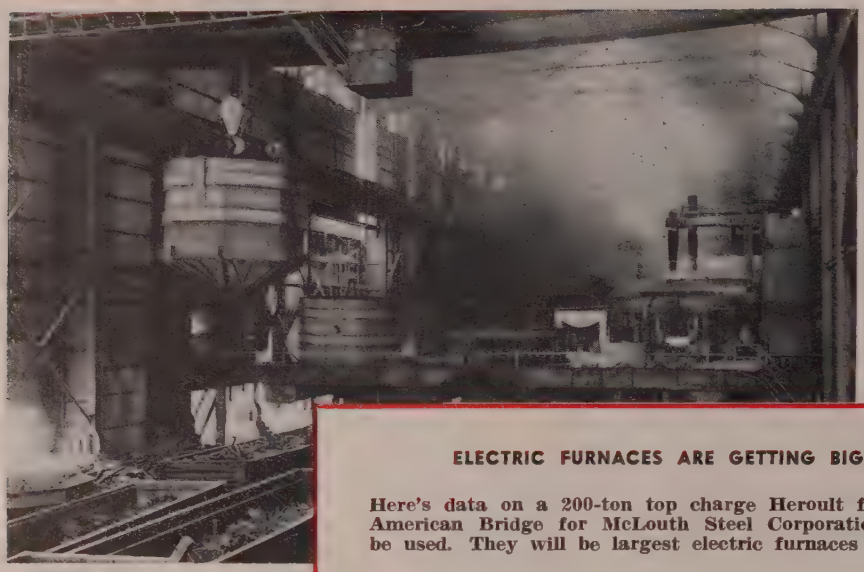
FLAT SURFACE FINISHING

To flat surface finish, use mill polish No. 4, 6, or 7; for special shop finishes, try No. 2B or other finish

Follow No. 240 grit or finer with cloth wheel, using aluminum oxide in stick form, then levigated alumina

Standard Tampico brush mill finish is called the No. 6 polish. It can be used directly on the No. 2B finish

Portable grinding wheels are popular. Never remove too much metal with fine abrasive. Use grease stick lubricants



Largest electric furnaces in op eration in this country are tw 22-foot diameter units o Northwestern Steel & Wire Co Sterling, Ill. Each furnac makes about 125 tons per heat Capacity of these top chargin electrics goes up to 150 ton

ELECTRIC FURNACES ARE GETTING BIGGER ALL THE TIME.

Here's data on a 200-ton top charge Heroult furnace being constructed by American Bridge for McLouth Steel Corporation. Two such furnaces will be used. They will be largest electric furnaces for steel in the world.

Inside shell diameter—24½ feet
Holding capacity—200 net tons
Transformer cap. 25000/33333 kva
24-inch diameter graphite electrodes to be used
Furnaces are swing roof, top charge, and so designed that the furnace shell may be tilted with the roof completely swung aside from the furnace shell.

Tilting, roof swing and roof lift are all accomplished by motor driven mechanical devices.
Furnace will have approximately 4000 cu. ft volumetric capacity and is capable of holding from 80 to 100 tons of scrap for the initial charge. Furnace on cold melt is expected to produce in excess of 24 tons of ordinary carbon or rim steel per hour.

STEEL
ELECTRIC FURNACES TAPPING OPEN HEARTH MARKET.....

By DR. ALLEN G. GRAY
Technical Editor

Open Hearth Challenged as . . .

MORE CARBON STEEL GOES ELECTRIC

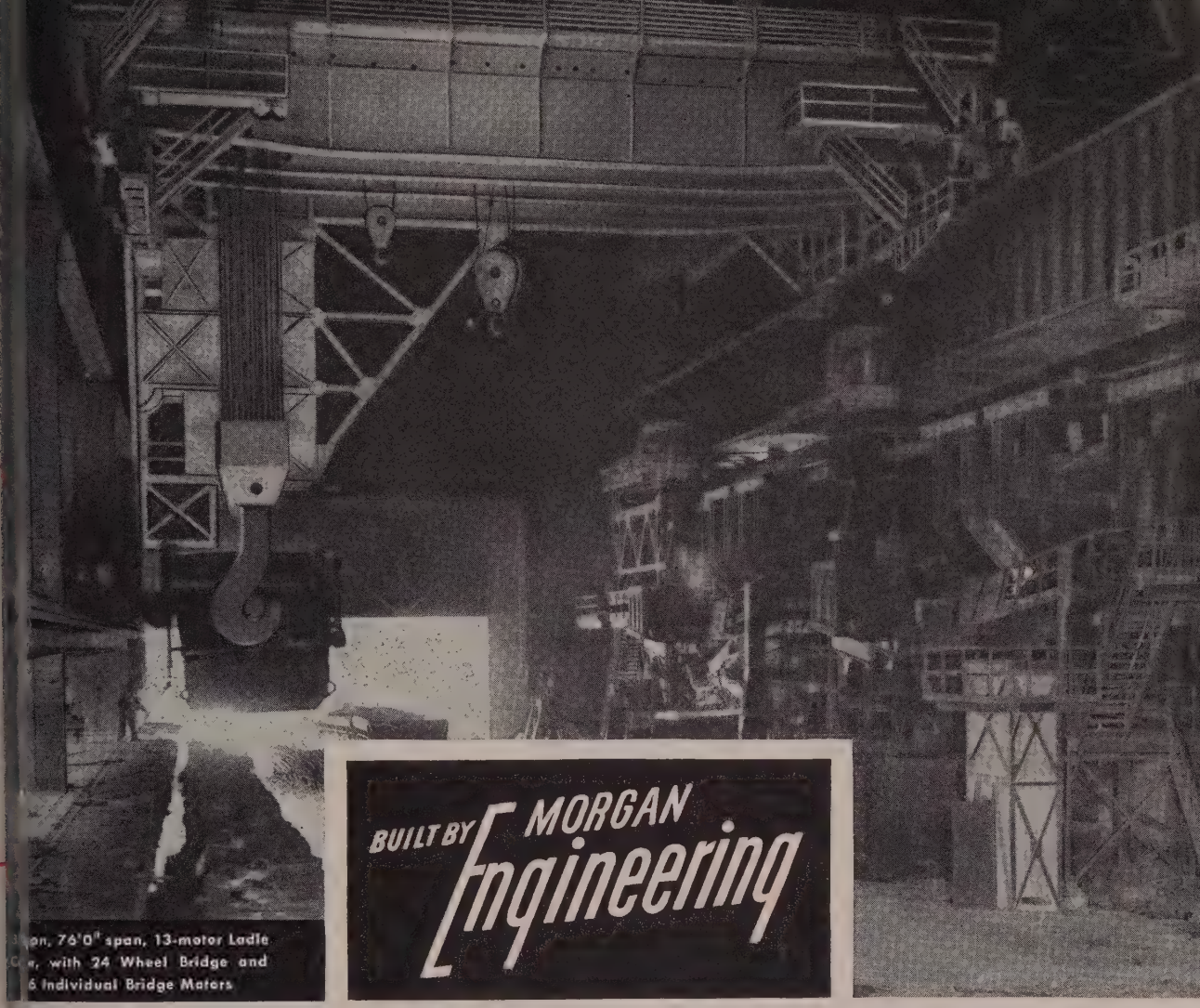
Fifty-two per cent of a record output of electric steel is carbon steel. Battelle report shows economics of electrics vs open hearth

KILOWATTS will have a bigger hand in steelmaking. At least there are a lot of favorable signs pointing in that direction.

Electric furnace steel will reach an all time high this year barring unforeseen changes. The first six months attained not only a record tonnage rate but also a record high percentage of total steel output. Electrics made over 4.2 million net tons of ingots and steel for castings in this period. This is 34.5 per cent more than last year, compared with an increase of 29 per cent in total steel production. Production in 1953 will almost double the peak war year of 1943 when about 4.5 million tons of electric steel were turned out.

Here is a significant point. Fifty-two per cent of the electric output was carbon steel based on figures for five of the six months. This may come as a surprise. Electric furnaces are thought of primarily as producers of alloy steel. While alloy production in electric furnaces continues to climb, the limelight is rapidly shifting to what can be done with the carbon steel.

The year 1946 marked the begi ning of the change. Since the electric furnace carbon has e ceeded alloy output every year d spite a big increase in alloy ste demand. Electric furnace capaci at the beginning of this year w 10.2 million tons against less tha 1.5 million in 1938. Open-hear capacity meanwhile rose to 102 million tons from 71.5 million. A cording to American Iron & Ste Institute figures, nearly three fourths of all ingot makers, son

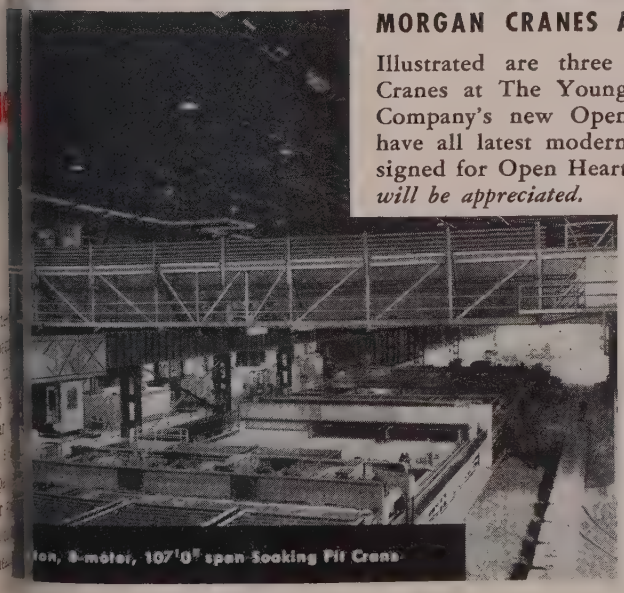


...on, 76'0" span, 13-motor Ladle ...r, with 24 Wheel Bridge and ...6 Individual Bridge Motors

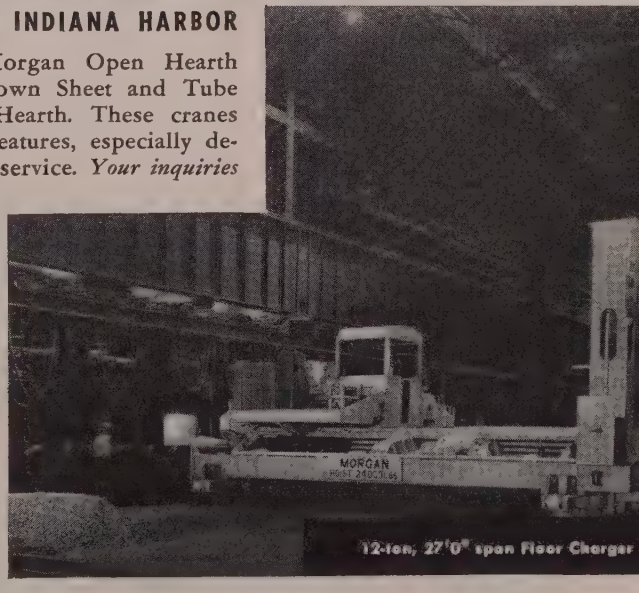
BUILT BY MORGAN *Engineering*

MORGAN CRANES AT INDIANA HARBOR

Illustrated are three Morgan Open Hearth Cranes at The Youngstown Sheet and Tube Company's new Open Hearth. These cranes have all latest modern features, especially designed for Open Hearth service. *Your inquiries will be appreciated.*



...ton, 8-motor, 107'0" span Soaking Pit Crane



12-ton, 27'0" span Floor Charger

THE MORGAN *Engineering* CO. ALLIANCE, OHIO • Pittsburgh, 1420 Oliver Building

DESIGNERS • MANUFACTURERS • CONTRACTORS • BLOOMING MILLS • PLATE MILLS • STRUCTURAL MILLS • ELECTRIC TRAVELING CRANES • CHARGING MACHINES • INGOT STRIPPING MACHINES • SOAKING PIT CRANES • ELECTRIC WELDED FABRICATION • LADLE CRANES • STEAM HAMMERS • STEAM HYDRAULIC FORGING PRESSES • SPECIAL MACHINERY FOR STEEL MILLS

ESTIMATED CAPITAL COSTS AND PRODUCTION COSTS PER TON OF INGOTS FOR OPEN-HEARTH AND ELECTRIC-FURNACE SHOPS

	Annual Plant Capacity (Tons of Ingots)					
	250,000 Tons		500,000 Tons		1,000,000 Tons	
	Open-Hearth Shop	Electric-Furnace Shop	Open-Hearth Shop	Electric-Furnace Shop	Open-Hearth Shop	Electric-Furnace Shop
Capital Cost	$11,750,000	$6,750,000	$16,900,000	$10,500,000	$26,650,000	$15,900,000
Cost above (cold charge)	$18.09	$18.59	$16.52	$17.07	$15.23	$16.26
Cost above (hot metal charge)	..	.....	13.95	15.95	12.93	15.14
Cost of metallics (cold charge)	47.80	44.10	47.80	44.10	47.80	44.10
Cost of metallics (hot-metal charge)	..	.....	42.23	41.33	42.23	41.33
Net production cost* (cold charge)	64.74	61.54	63.17	60.02	61.88	59.21
Net production cost* (hot-metal charge)	.. ..		55.03	56.13	54.01	55.32

* Including fixed charges and credit for recoverable scrap.

Battelle Report

60 companies, have electrics.

Cost Angle—In 1952, all five of the companies newly added to the list of steelmakers operated electric furnaces exclusively for producing steel. The five brought to 42 the number of companies making steel exclusively in electrics, or about half of nearly 86 ingot producers. Prior to World War II, 21 of the 74 ingot producers were in this classification. Electric furnace methods are especially popular among the smaller steel companies. However, several producers have capacities running well up in the hundreds of thousands of tons annually.

About this time last year STEEL reported (Aug. 25, 1952, p. 110) that the final three 125-ton open hearths at Timken Roller Bearing Co., Canton, O., were being replaced with 80-ton basic electric arc furnaces. This move gave Timken an all-electric shop with a total of nine furnaces. It was figured that the top-charged electrics would better the tonnage of the open hearths being replaced because of increased speed of charging and melting.

During the war, electric furnaces were expanded to supply increased demands for high-quality steels. When the end came, some of the producers, finding that they had excess electric capacity, started to experiment with low-carbon steel. About the same time improvements in electric steelmaking equipment came along: Swing roof, high rates of energy input, increase in furnace size, etc. These developments reduced charging time, decreased melting period, and lowered current consumption. Producers took stock of their limited cost data. It looked as if the electric cost level was competitive with open hearth.

Grow Larger—A striking development in technology of electric furnace construction is increased size. Some now being built are double the size of what was the largest in the world only a short time ago. Largest furnaces in operation in this country now are two 22-foot diameter units at Northwestern Steel & Wire, Sterling, Ill. They are producing 36,000 tons of good ingots per month, each furnace making 125 tons per heat.

But larger ones are in the making. American Bridge Division of U. S. Steel is constructing two 200-ton Heroult furnaces for McLouth Steel Corp., Detroit. These furnaces with an inside shell diameter of 24½ feet will be the largest electric furnaces for steel in the world. Pittsburgh Lectromelt Furnace Corp. has under construction a 24-foot furnace for Ste. Ame. de la Fabrique de Fer in Belgium which will operate on 150-ton heats for plate steel.

Mechanized—The McLouth furnaces are swing roof, top charge and are so designed that the furnace shell may be tilted with the roof completely swung aside from the furnace shell. Graphite electrodes used will be 24 inches in diameter; transformer capacity will be 25,000 to 33,333 kva. Tilting roof swing and roof lift are all accomplished by motor-driven mechanical devices.

Furnaces will hold from 80 to 100 tons of scrap for the initial charge. One furnace on cold melt will produce in excess of 24 tons of ordinary carbon or rim steel per hour. Output of modern 250-ton open hearths on a 50-50 hot metal charge is about 20 tons per hour.

Progress — Metallurgists agree that operations are being carried out today in electric furnaces that were considered impractical several years ago. Some attempts at producing steel from 100 per cent hot metal, or in lesser amounts, have been successful. However, there is need for additional study to raise the commercial potential.

During the war, one small mill took liquid iron at about 3.5 per cent carbon and reduced it to 0.2 per cent carbon in about 1½ hours with additions of iron ore. A 50-ton furnace was used with ore and lime placed on the bottom and hot metal poured on top.

Mixed Charge—This practice has been used by other companies but not on 100 per cent hot metal charge. In general, up to 50 per cent hot metal charges proved successful as compared with the open hearth. One heat taking 35 per cent hot metal had a power consumption of about 500 kwh per ton. Ore, limestone and scrap were introduced at the start and when about 90 per cent molten, the hot metal was added.

One new plant is basing its production on charging 60 per cent hot

metal into the electric furnace with 40 per cent scrap, a normal open-hearth charge. Another company is planning on the basis of blast furnace, converter, and electric furnace, depending on the converter to bring down the carbon in the charge.

There is evidence on all sides that steelmakers are working hard to develop practice for handling hot metal in the arc furnace. Use of 100 per cent hot metal charge is not something to be speculated about. It can actually be done if proper care and precautions are taken.

Added Impetus — New evidence has been compiled which brightens the economic side and backs up favorable cost data of scattered producers working on their own. Battelle Memorial Institute has just completed a comprehensive technical-economic study of the advantages and disadvantages of producing carbon steel in electric furnace and in open hearth. The research was sponsored by a group of electric utility companies and Bituminous Coal Research Inc.

Battelle workers contacted a number of steel companies, engineering firms and equipment manufacturers to get data on capital and operating costs. Modern plants of three sizes formed the basis of the comparative cost study: 250,000, 500,000 and 1,000,000 tons per year employing two different practices —complete cold metal and 50-50 hot metal-cold scrap. Only the cold metal practice was studied for the smallest sized plant. Although the use of hot metal in the electric furnace is not now widely practiced, the report noted that there is no reason to doubt its ultimate feasibility.

Cheaper to Build—Here is one of the first points brought out: Capital costs of electric furnace plants of the three sizes, $6.75 million, $10.5 million and $15.9 million, are only about 60 per cent of the costs of comparable-sized open hearths. (See table, p. 86)

Other points: The cold melt steelmaking process using scrap and pig iron shows a lower cost for the electrics. Electric furnaces show a greater annual return on investment. For the 50 per cent hot metal-50 per cent scrap metal process annual return on invested capital with the electric furnace is equal to or greater than the open hearth. The study was based on full capacity operation. Less than full capacity operation favors the electric furnace because fixed costs are lower.

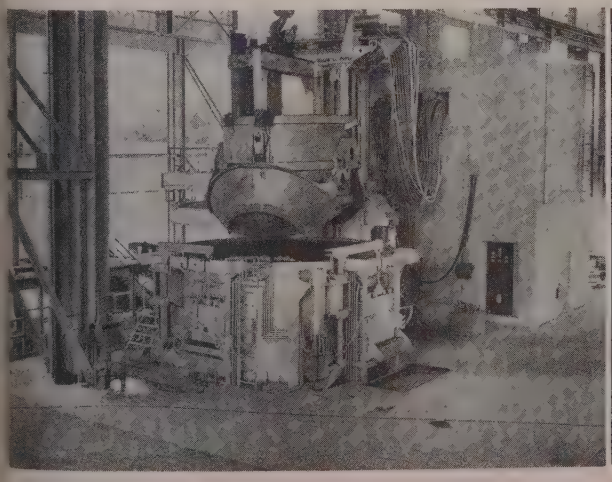
Examine Data — Let's take a closer look at some of the figures in the report. In accordance with steel company practice, the study splits ingot production costs into two groups: 1. Cost-above items which includes all costs except costs of metallics in the charge and 2. cost of metallics in the charge. Group 2 comprises about three-fourths of the total net production costs—total gross production costs less credit for recoverable scrap. In the Battelle analysis, this scrap credit amounted to 60 pounds at $43 per gross ton, or $1.15. Power rate figure used was 9 mils.

Detailed figures showed that with the cold charge practice, estimated electric furnace cost-above is 55 cents higher for the 500,000-ton year scale and $1.03 per ton higher for the 1,000,000-ton year basis, as compared with conventional open hearth. With hot-metal practice, the spread is even higher, $2.00 and $2.21.

Lower—Cost of metallics, however, is lower for the electric furnace. Figures show these costs to be moderately lower with hot-metal practice ($0.90 per net ton) and much lower with cold-metal practice ($3.70 per net ton). This is the result of higher proportions of cheaper scrap chargeable in the electric furnace with cold pig costing $15 per gross ton more. Higher yield is also a substantial factor in keeping cost of metallics lower in the electric furnace than in the open hearth.

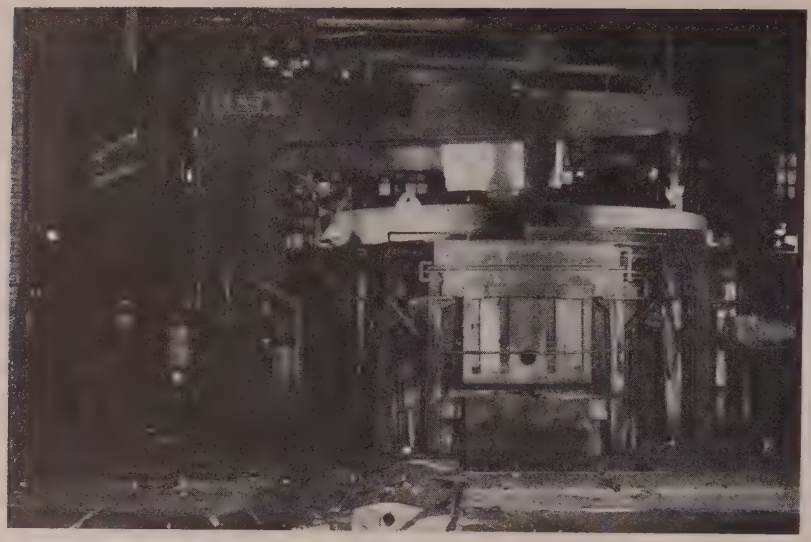
With credit for scrap assumed the same for all practices, the net production costs per ton of ingot are substantially lower for the electric furnace than for the open hearth with cold metal practice, but are $1.10 and $1.31 higher for the electric furnace using hot-metal practice.

Yield Factor — Higher yield of the electric furnace is important in lowering its cost compared with the open hearth. In cold-metal practice, this yield advantage is known to be about 2 per cent in



Charging 75-ton Lectromelt furnace at Atlantic Steel

Tapping a heat from a Whiting 8 MT electric furnace



Type 50 Heroult furnace converted to top charge, swing roof. American Bridge Division is constructing two 200-ton Heroults for McLouth Steel where tilting, roof swing and roof lift will be accomplished by mechanical devices

favor of the electric furnace—91 per cent compared with 89 per cent. Experience with the electric furnace using hot-metal practice is limited. Sound metallurgical thinking indicates a somewhat higher yield for the electric furnace than for the open hearth. The report estimated it to be 88 per cent for the electric furnace compared with a known average yield of about 87 per cent for the open hearth.

Aside from these cost figures there are other factors, not tangible enough to be expressed in dollars and cents, which are of practical importance. They may acquire even greater importance in the predictable future. In some instances, these considerations may outweigh differences in production costs.

Consider All Sides—The arc furnace is a more flexible piece of steelmaking equipment than the open hearth. For maximum economy an open-hearth shop must be in continuous operation. If it is withdrawn from production for days or even weeks, the furnaces must be fired, though usually at a reduced rate. Putting a cold open hearth into production is also a slow process.

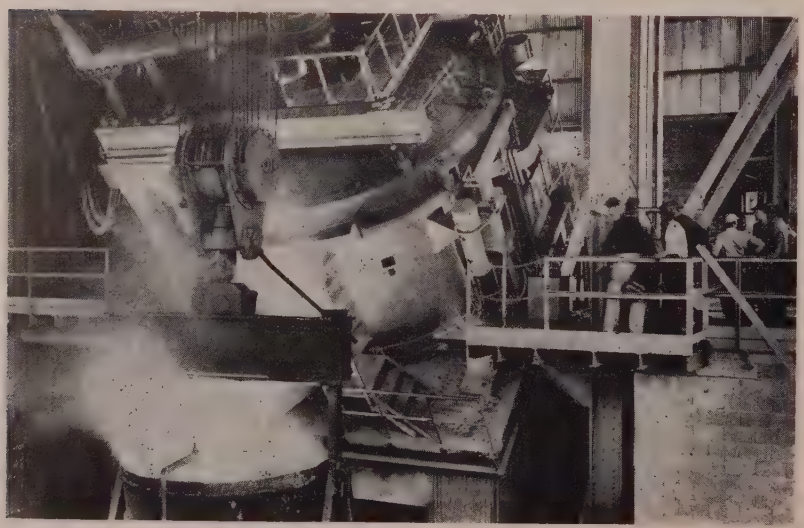
Electric furnaces have an advantage here. They can be placed in operation or shut down with less loss of time or loss of electric power. The arc furnace consumes power and requires attendance only when in operation. It can be operated on one shift daily; open hearth requires 24 hours operation. When a steel plant is operated at full capacity, the flexibility of the arc furnace may not be an important economic factor. At any lower rate of operation, it can become an important attribute of the process.

Usable Capacity—Furnace availability is another factor influencing comparison between open-hearth and electric furnace shops. The Battelle survey rated the availability of an open-hearth furnace in a modern plant at 92 per cent and the electric furnace at 96 per cent. This means that in a 12-month period, an open-hearth furnace is out of production about 30 days while an arc furnace must be withdrawn for repairs only about 15 days each year. When the demand for steel is high, furnace availability is dollars in the bank.

Ingot yield is important to economics of steelmaking. Battelle estimates the ingot yield of an arc furnace to be about 2 per cent higher than that of an open-hearth furnace. Some operators feel the difference in ingot yield may favor the electric furnace as much as 3 per cent. Higher ingot yield of an arc furnace is definitely established for a cold-charge process but is assumed for a hot-metal charge because there is scarcely any data around on the latter.

Sulphur—Control of sulphur in open-hearth steelmaking is a serious problem. In the future this problem may become more pressing. The electric furnace is in a favorable position. Since electric energy is used for heating, it is free from the major source of sulphur contamination. Another point: It permits ready control of sulphur introduced by the metallic charge. The Battelle report estimates that the necessary adjustments in composition of slag and temperature of the bath may be

Continued on p. 108



An 18-foot diameter Lectromelt furnace pouring 75-ton heats. A similar furnace 24 feet in diameter will operate on 150-ton heats for plate steel

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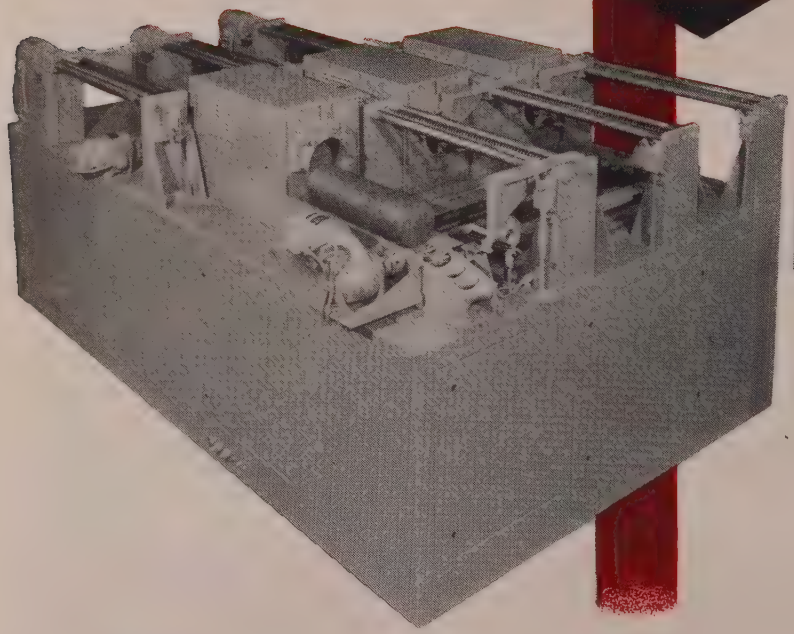

The Loftus 60-cycle Thermo-Induction H
illustrated is designed to heat copper,
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poses. The unit is readily adaptab
forging and rolling processes. It is
sible, with this billet heater to heat
dia. Aluminum billet to 800° F., an 8
brass billet to 1550° F., and a 10" dia.
nickel billet to 1950° ALL AT THE SAME
IN THE ONE FURNACE. Each billet is h
independently . . . from a single control

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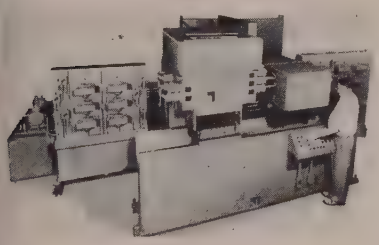
NEW PRODUCTS and equipment

Reply card on page 95 will bring you more information on any new products and equipment in this issue

Nut Torquing Machines

. . . achieve automatic operation

Line of automatic nut-torquing assembly machines is designed to cut assembly line labor costs and improve product quality of bolted assemblies. These hydraulic-powered multiple spindle machines will



automatically tighten a nut or bolt to given torque specification, tighten a bolt to specified elongation or drive a stud to given depth.

In effect, they act as automatic gaging machines, and reduce scrap, since individual spindles will not drive bolts, studs or nuts if their thread fits exceed specified tolerances or if the fastener is improperly started. Heart of the machines is their drive, by which each spindle is powered by hydraulic fluid motor. Hautau Engineering Co., Dept. ST, 721 Wanda, Ferndale 20, Mich.

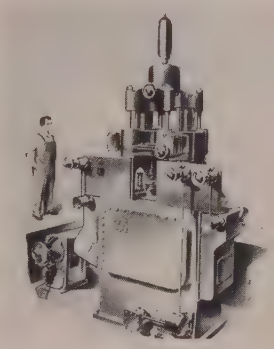
FOR MORE DATA—CIRCLE REPLY CARD NO. 1

Compacting Press

. . . closed, sealed mechanism

Model C compacting press is a mechanical, four-column crank-type, equipped with flywheel, pneumatic clutch and brake. Operation is by variable speed drive unit with 20-hp totally-enclosed motor. Entire press mechanism is enclosed and sealed to prevent entrance of abrasive materials, making it suitable for compacting powdered metal as well as pressing ceramic parts and grinding wheels.

Accurate compressing pressure



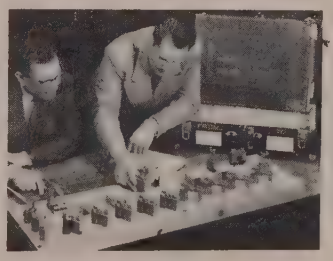
is assured by use of a hydraulic head whose ram supplies opposing pressure for the upper punch. Baldwin-Lima-Hamilton Corp., Dept. ST, Philadelphia 42, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 2

Shop Planning in 3-D

. . . move models, not machines

You can use this three-dimensional scale model layout kit to simplify problems of laying out or rearranging a shop. The manufacturer offers to ship a kit on a



free loan basis to eliminate hours of laborious drafting. Included are models of machine tools, mechanics, and floor plan layout sheets cross-ruled to the same scale as the models.

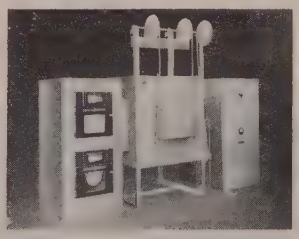
Another value is the ease with which lighting, workspace, traffic lanes, etc., can be studied. Errors difficult to observe on a draftsman's layout become instantly obvious. South Bend Lathe Works, Dept. ST, South Bend 22, Ind.

FOR MORE DATA—CIRCLE REPLY CARD NO. 3

Heat-Treat Furnace

. . . continuous duty to 2500°F

This general purpose furnace can be used throughout the full heat-treat range, handling all requirements including high-speed steels at continuous heavy duty up



to 2500° F. Loading area of model FG-430 is 14 x 24 x 12 inches; outside dimensions, 50 x 52 x 84 inches, excluding panels.

Gas-tight ports provide for connecting the atmosphere-reducing sources. The counterbalanced door is foot-controlled and air-operating. Pereny Equipment Co., Dept. ST, 893 Chambers Rd., Columbus 12, O.

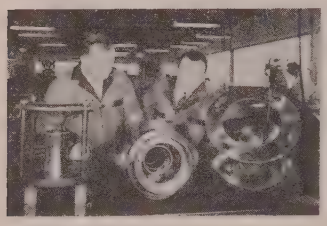
FOR MORE DATA—CIRCLE REPLY CARD NO. 4

Pitch Line Concentricity Arbor

. . . control from spline to face

These pitch line concentricity arbors and chucks are reported an answer to machining and inspection problems where control of close tolerances is essential from

spline pitch diameters to face, shoulders, bores and external pitch dimension of gears. On one job, the manufacturer reports its unit



was able to repeat within 0.0003 inch of gear tooth pitch diameter on a gear 5 inches OD, 5/8-inch face with splined bore.

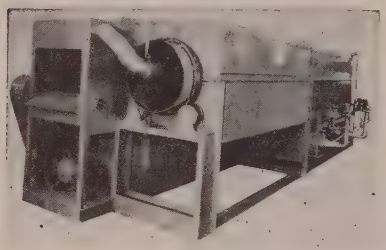
Units are designed to be manually or draw-bar operated. Splinemaster Products Division, Great Lakes Broach Inc., Dept. ST, 25800 Groesbeck Highway, Roseville, Mich.

FOR MORE DATA—CIRCLE REPLY CARD NO. 5

Combination Washing Machine

. . . rotary drum, flat belt units

A new combination rotary drum and flat belt washing machine removes drawing compounds, cutting oils, grease and shop dirt from metal parts. Built with both a rotary drum and a flat belt conveyor, use of the unit means small



parts that can be tumbled are washed, rinsed and dried; tote boxes and larger parts are processed on the conveyor. Metalwash Machinery Corp., Dept. ST, 901 North Ave., Elizabeth 4, N. J.

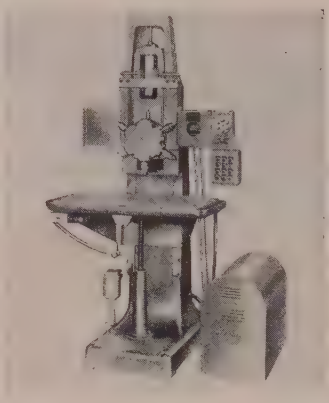
FOR MORE DATA—CIRCLE REPLY CARD NO. 6

Automatic Turret Drill

. . . low-cost second operations

Model 2BH six-spindle automatic turret drill is designed to hold down costs on any second operation. Outstanding feature is the infinitely-variable hydraulic feed which can be manually-controlled for automatic operations. Increased efficiency of this model enables one operator to handle more than one machine simultaneously.

The drill has 12 preselective spindle speeds available for each spindle. Table travel of 19 inches



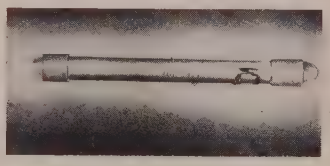
with large work table permits wide part size range. Positive depth stops are preselective to each spindle. Burg Tool Mfg. Co., Dept. ST, 3743 Durango Ave., Los Angeles 34, Calif.

FOR MORE DATA—CIRCLE REPLY CARD NO. 7

Soapstone Holder

. . . no loss from breakage

Light weight — it weighs 3 ounces—soapstone holder is designed to eliminate loss from breakage. For convenience, a durable clip is attached. It has an automatic locking device that makes



soapstone adjustable to any length for different marking conditions.

Applications extend to any job in which metal marking is essential. See-Line Co., Dept. ST, 618 Amarillo Bldg., Amarillo, Tex.

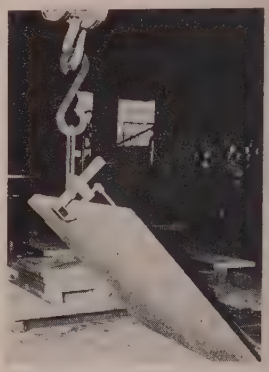
FOR MORE DATA—CIRCLE REPLY CARD NO. 8

Portable Positioner

. . . joins wedge, screw, toggle

Built for lifting plates, weldments, castings and all heavy machinery and equipment, this portable positioner is a special-purpose tool that combines wedge, screw and toggle. Construction and the steel used in the frame give flexibility for gripping and strength for the load.

The positioner lifts its load into any desired position and can remain clamped while it goes through any number of operations. Self-



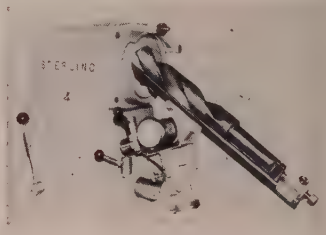
aligning heat-treated grip cups have knife edges to cut through paint, grease, rust and scale. James Campbell Smith Co. Inc., Dept. ST, Willoughby, O.

FOR MORE DATA—CIRCLE REPLY CARD NO. 9

Bench Model Drill Grinder

. . . 1/8 to 2 1/2-inch drills

This bench model drill grinder, model DB, is a single-purpose machine built without the carbide tool grinding feature that is in-



cluded on the manufacturer's pedestal model DA. The grinder has capacity for 1/8 to 2 1/2-inch drills and handles two, three and four-lip drills without change in setup.

No collets or jaws are required to hold the drills. McDonough Mfg. Co., Dept. ST, Eau Claire, Wis.

FOR MORE DATA—CIRCLE REPLY CARD NO. 10

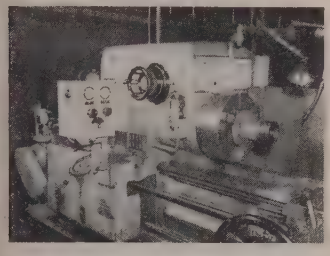
Air Chuck Controller

. . . two preset pressures

Two preset pressures for pressuring the air cylinder on lathes that have air chucks are provided by type 675 controller. This dual

pressure system is advantageous when castings are being machined and it is necessary for machine operators to center the casting in the chuck.

By providing a third position for the control valve, in addition to



conventional open and closed release and run positions, the operator can easily apply the right pressure to the cylinder to hold the casting in the chuck for centering before full pressure is applied for machining. Type 675 is entirely pneumatic in operation. Fisher Governor Co., Dept. ST, Marshalltown, Iowa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 11

Portable Directional Shield

. . . handles cobalt 60 safely

DES portable directional exposure shield provides safe handling of strong sources of Cobalt 60 for industrial radiography. The unit can be used for sections from 4 inches or more down to a fraction of an inch of steel, brass, bronze, etc.

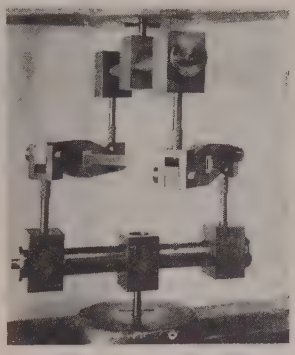
During exposure, radiographer is perfectly safe in the immediate area as long as he is outside the actual beam. Cobalt 60 is moved into or out of position by merely rotating a handle through 180 degrees. Technical Operations Inc., Dept. ST, 6 Schouler Ct., Arlington, Mass.

FOR MORE DATA—CIRCLE REPLY CARD NO. 12

Torsion Testing Device

. . . specimens 2-12 inches long

Schaevitz torsion device is introduced to produce pure torsion on a tension testing machine. Test specimens up to ¾-inch square, in a range from 2 to 12 inches long—plus 2 inches to be engaged by torque bars—can be twisted to a maximum 24 degrees. Maximum torque load is 60,000 inch-pounds, obtained by applying 12,000 pounds tension load.



Device is furnished with hardened socket liners for specimens ⅜, ½, ⅝ and ¾-inch square or for round specimens with square ends of these sizes. Baldwin-Lima-Hamilton Corp., Dept. ST, Philadelphia 42, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 13

Triple-Purpose Gun

. . . sand, air, liquid cleaning

Effective for cleaning small parts and surfaces with sand, liquid or air, the Carco gun operates on air pressures of 75 pounds and up. Gun has light, strong metal body, a precision-

built valve and trigger assembly and is equipped with hardened steel jet and nozzle.

Complete kit contains gun, three extra hardened nozzles, extra jet, glass container, fittings and hose. C. A. Roesch & Co., Dept. ST, 1221 S. Hope St., Los Angeles 15, Calif.

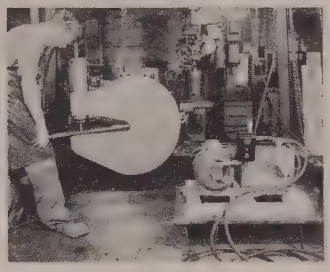
FOR MORE DATA—CIRCLE REPLY CARD NO. 14

Mobile Hydraulic Punch

. . . provides 75 tons thrust

Designed for production use and for taking test slugs during rolling operations, this Guillotine punch combines 75-ton thrust with relatively light weight and mobility. Punch unit weighs 1650 pounds, is capable of punching a 1-inch hole through ¾-inch mild steel plate.

Its range is 13/16 to 1¾ inches.



Operating cycle takes 3 seconds per punch. It can be boom-mounted and swung into position to make the punch. Manco Mfg. Co., Bradley, Ill.

FOR MORE DATA—CIRCLE REPLY CARD NO. 15

No-Bounce Hammer

. . . has replaceable tips

Impax no-bounce hammer is reported to achieve an absence of rebound, producing a dead blow with 30 per cent more driving power. Replaceable, interchangeable and locked-in tips and nonferrous hammer head provide a

sparkproof surface that eliminates fire and explosion hazards. Tips will not chip, mushroom, crack or shatter. New Plastic Corp., Dept. ST, 1026 N. Sycamore, Los Angeles 38, Calif.

FOR MORE DATA—CIRCLE REPLY CARD NO. 16

Gear Chamfering Line

. . . pitch diameter: ⅝ to 9¼ in.

Universal high-speed gear burring and chamfering machine line is capable of deburring and chamfering the complete tooth form—both sides and root—on a gear range from ⅝ to 9½ inches pitch

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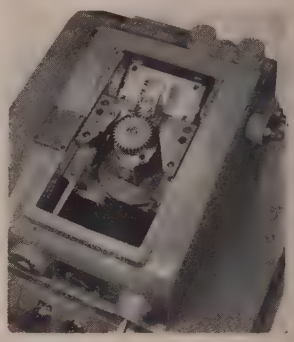
80 PLATT STREET, HATBORO, PENNSYLVANIA
757 SO. PALM AVENUE, ALHAMBRA, CALIFORNIA

diameter. To chamfer both sides of the tooth and the root on one side of a gear takes less than 1/5 second. Translated into pieces per hour, the Burr-Master will finish gears with 22 teeth at a



rate of more than 600 per hour, at 80 per cent operating efficiency.

Simplicity of precision tooling permits rapid changeover from one part to another—normally in about 10 minutes—without need for skilled help. Modern Industrial Engineering Co., Dept. ST, 14230 Birwood Ave., Detroit 4, Mich.

FOR MORE DATA—CIRCLE REPLY CARD NO. 17

Chemically-Treated Cloth

. . . cleans, mistproofs glass

This chemically-treated cloth, called Seecloth, is effective for

simultaneously cleaning and mistproofing goggles, masks, windows etc. Merely wiping the glass or

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INFORMATION

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6[illegible]. Heat Treating Equipment

Fahralloy Co.—Of interest to heat [illegible]eating personnel, illustrated bulle[illegible]ns 110, 111, and 112 deal with solu[illegible]on pots, three-post fixtures for pit [illegible]oe furnace quenching operations a[illegible]d a segmental hearth, respectively. A[illegible]y section of the "articulated" or s[illegible]gmental hearth can be replaced as r[illegible]quired.

6[illegible]. Precision Thread Grinder

Ex-Cell-O Corp.—The style 36 pre[illegible]sion thread grinder is subject of i[illegible]ustrated bulletin 48824. This ma[illegible]chine will grind right or left hand s[illegible]ingle or multiple start threads in a[illegible]y pitch from 1 to 128 threads per [illegible]nch. Machine features are discussed, t[illegible]gether with a floor plan and com[illegible]plete specs.

7[illegible]. Lathe Mountings

Felters Co.—How Unisorb mount[illegible]ing pads and cement are used for r[illegible]ounting heavy duty, production and l[illegible]ight weight lathes is detailed in this 4 page illustrated bulletin. Vibration is [illegible]ontrolled without drilling or lagging m[illegible]achines into the floor.

71. Standard Bore Couplings

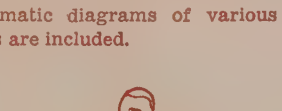
Michigan Tool Co., Cone-Drive [illegible]ears Div.—4-page illustrated bulle[illegible]t[illegible]n CDC-52 covers Cone-Drive stand[illegible]ard bore couplings, made in standard s[illegible]izes for Cone-Drive worm and gear s[illegible]afts and electric motor shafts. Spec[illegible]ifications for the compact seven-piece u[illegible]nits are given.

72. Filtering Systems

Wm. W. Nugent & Co.—Describing a line of filtering systems for cool[illegible]ants and cutting oils, bulletin 14A il[illegible]lustrates both pressure and gravity t[illegible]ype units with capacities up to 2000 g[illegible]al per hour. Operating principles are [illegible]iagrammed.

73. Transmission Systems

Fischer & Porter Co.—Pneumatic, [illegible]agnetic, electric, electronic and elec[illegible]tronic-follower transmission systems for use in measurement and control of flow, pressure, liquid level, viscosity and specific gravity are subject of 20-page illustrated catalog T-50. Performance characteristics and schematic diagrams of various systems are included.



74. Hydraulic Presses

Verson Allsteel Press Co.—24-page well illustrated catalog H-52 is descriptive of line of hydraulic presses including straight side, post type, double action, gap frame, horn type and wide range of special models. Design details and the Hydrol speed circuit are highlighted.

75. A Machine Tool Plant

Norton Co.—"Tomorrow Is Already Here" is intriguing title of 24-page brochure which not only describes the facilities at this new plant, but provides an insight into vision and thought that went into its development. The human, as well as the "plan for tomorrow" angle is effectively tied in.

76. Cleaning Equipment

Topper Equipment Co.—Including vapor, vapor-spray, liquid-liquid-vapor, pit type and conveyorized degreasers, Circo metal cleaning equipment is described in 4-page illustrated bulletin No. 521. Equipment operates with either perchlorethylene or trichlorethylene solvents.

77. Gear Fabrication

National Broach & Machine Co.—Three of the four pages of this folder are devoted to a bibliography of gear production methods, showing the sources of more than 100 significant articles. Back page then gives basic facts on the gear tooth crowning process in question and answer form.

8-24-53

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78. Plant Location

Walter Kidde Constructors, Inc. — Assistance in selection of a location for a new plant is provided by the 12-page brochure "Factors Influencing Industrial Plant Location." It compiles 64 basic questions which must be answered and evaluated. Among subjects covered are transportation, fuel, labor, community attitude, climate, site and laws and taxes.

79. Tungsten Carbide Products

Metal Carbides Corp.—Full line of tungsten carbide products, including cutting tools, draw dies, bushings, gages, centerless blades, rolling mill work rolls, diamond wheels and dressers and solid carbide stock is detailed in 72 pages of general catalog 52-G. Much engineering data are included.

80. Handling Equipment

Allied Mfg. & Sales Co.—Wide variety of materials handling equipment and C-clamps is covered in 36-page color-coded and tabbed catalog. Handling equipment includes two-wheel hydraulic hand lift trucks, stacker hand trucks, hydraulic elevators, barrel and totepan dumpers, portable cranes, etc.

81. Bending Rolls

Niagara Machine & Tool Works—How rolling of cylinders is "as easy as A-B-C" is shown in 4-page bulletin 88-A on the 6-in. series of all steel bending rolls. Operating details and machine features are covered. Specifications are given.

82. Corrosion Prevention

Metallizing Engineering Co.—In 4-page bulletin "Corrosion Prevention with Metallized Zinc or Aluminum" is described and illustrated the application of 18 basic engineering specifications which provide long-term, economical protection against corrosion. Coating life expectancies range upwards of 25 to 30 years.

83. Lock Nuts

Palnut Co.—8-page bulletin No. 577 describes lock nuts for heavy assemblies and severe vibration conditions. It outlines locking principles, advantages, assembly methods, sizes, materials, finishes and other engineering information.

84. Production Facilities

Stryker Machine Products Co.—Illustrating a number of the machines available, and giving a complete list of automatic screw machines, turret lathes, and inspection equipment, 4-page folder describes contract ma chined parts production facilities. An job can be processed from raw mate rial to finished part.

85. Air Powered Equipment

Mead Specialties Co.—56 pages o 1953 Mead Air Power Catalog de scribe and illustrate line of singl and double-acting air cylinders an air-operated presses, vises, chucks valves, hammers and work feeder

EDITORIAL ARTICLES
Available in Limited Quantitie

86. Cleaning Stainless Strip

L. H. Wilson of Sharon Steel Corp tells how three strands of stainles strip are annealed, descaled and elec tropickled in single pass through lin in STEEL article "Stainless Strip De scaled and Brightened Continuously." Scale-free surface shows no bas metal attack.

87. Induction Welding

With the kinks out of forming, in duction welding of nonferrous tub ing is making light gages cheaply fo the first time and at rates up to 12 fpm. The process, developed by Yode Co. of Cleveland, is described i STEEL article "Nonferrous Tubing Smashes Speed Barrier."

88. Brazing Tips

"Brazing Tips for Flexible Hose are presented in STEEL article of th same title by J. R. Summer, Projec Engineer, Titeflex Inc. Proper fluxing heat control and braze speed are fac tors emphasized.

89. Carbon Products

Manufactured carbon products tha help the steelmaker get more tonnag out of his production dollar receiv due recognition in STEEL article "Mor Carbon for the Steelmaker." Author J. S. Copley and E. F. Sipp Jr., Na tional Carbon Co., summarize prop erties and point up thermic, mechani cal and chemical applications.

90. Aluminum Clad Steel

Part II of STEEL article "Use th Right Process for Coating Steel wit Aluminum" gives attention to tech niques for hot dip coating of fabri cated parts. Article, which reveal the growing interest in aluminum cladding of steel, is adapted fro work "Aluminum in Iron and Steel," by S. L. Case and K. R. Van Horn

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transparent plastic is sufficient not only to clean but to mistproof it for a period ranging from a few hours to two weeks, depending on atmospheric conditions.

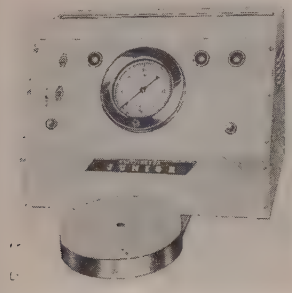
The cloth can be used many times, remaining effective for several months. Hygiene Research Inc., Dept. ST, 684 Broadway, New York 12, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 18

Vacuum Leak Detectors

. . . dry, nondestructive and fast

Dry, nondestructive and fast testing with this vacuum leak detector includes applications in castings, weldments and assemblies that must be fluid or air tight.



The Junior line of detectors is designed for bench location and all units are supplied with vacuum pumps built in or engineered to fit the application.

Units are offered in manually-operated, semiautomatic or automatic models. Whittington Pump & Engineering Corp., Dept. ST, 1126 Prospect St., Indianapolis 3, Ind.

FOR MORE DATA—CIRCLE REPLY CARD NO. 19

Interior Surface Inspector

. . . magnifies image five times

Inspection of interior surfaces, hard-to-reach areas and machines can be completed readily by this 17-inch instrument. Straight tube

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JEWEL BRAND

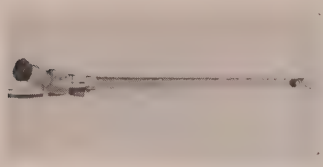
Abrasive Belts

for grinding, sanding, polishing — metal, wood, leather, plastics, rubber

ABRASIVE PRODUCTS, INC.
511 Pearl Street
South Braintree 85, Massachusetts

that carries the inspection light is 12 inches long, with reflector in the tip to pick up image and carry it through the tube to the eyepiece.

The latter has an optical system consisting of lens and prism



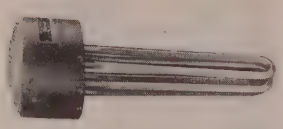
that enables the viewer to see a lighted image magnified five times. Tube rotates 360 degrees to permit viewing walls of cylinders and tubes without turning object or changing eye position. Badger Sales Co. Inc., Dept. ST, 2251 W. Pico Blvd., Los Angeles 6, Calif.

FOR MORE DATA—CIRCLE REPLY CARD NO. 20

Electric Immersion Heater

. . . copper and steel sheathing

Flanged tubular-type electric immersion heater, added to the manufacturer's electric heating line, provides higher heat output and new size flange 5⅜ inches in diameter. Heating elements are available in



two sheath materials. Type TM-4, for water heating, has copper-sheathed elements brazed to a brass flange; type TMO-4, for use in oil or paraffin, has steel-sheathed elements welded to cast iron flange.

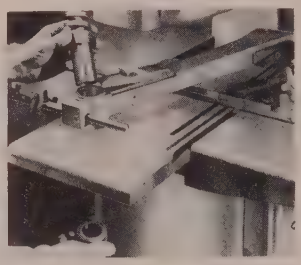
Both types are single-phase and available in 120, 240, 480 and 550-v ratings, with capacities from 4 to 12 kw. Edwin L. Wiegand Co., Dept. ST, 7579 Thomas Blvd., Pittsburgh 8, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 21

Sheet Metal Fabricator

. . . rapid interchangeability

Model 10-AA sheet metal fabricator operates with a minimum of vibration and noise at 165 strokes per minute for single hole punching and nibbling. Rapid interchangeability for punching, notching and nibbling is an outstanding feature. Operators work from



blueprints or operation sheets without templates.

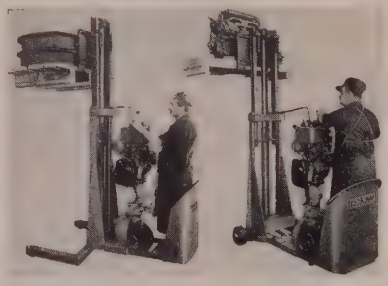
Holder incorporates the manufacturer's quick-change system, permits 10-second changing of punches and dies for punching various round and shaped holes up to 1¼-inch in diameter. A second holder provides punching various round and shaped holes up to 3½ inches in diameter, requiring interchanging of three parts—punch tip, stripping plate and die. Wales-Strippit Corp., Dept. ST, 345 Payne Ave., N. Tonawanda, N. Y.

FOR MORE DATA—CIRCLE REPLY CARD NO. 22

High Lift Models

. . . satisfy low load limits

Two high lift trucks solve problems of low load limits on elevator floors in the light weight field. Both models are designed around



the company's 360-degree rotating power turret.

Model D-15 has 1500-pounds capacity; model DS-20 has 2000-pounds capacity. Power is provided on both trucks by an air-cooled engine that operates a full 8-hour shift on a single gallon of gasoline under normal working conditions. Truck-Man Division, Knickerbocker Co., Dept. ST, 915 E. Jefferson Ave., Detroit 7, Mich.

FOR MORE DATA—CIRCLE REPLY CARD NO. 23

Magnet-Equipped Truck

. . . handles castings or scrap

Adapted for handling castings, cast iron or steel borings and steel turnings, this 6000-pound capacity gas truck has lifting magnet supported on a gooseneck boom. The truck mounts a 36-v model Z-36 Ready-Power unit that supplies current to energize the magnet.

Fingertip controls raise the load and energize the magnet. Magnet can be hung at any one of four different positions on the boom. Hook capacity varies from 4700 pounds at 36-inch outreach to 3000 pounds at 72-inch outreach. Yale Materials Handling Division, Yale & Towne Mfg. Co., Dept. ST, Philadelphia 15, Pa.

FOR MORE DATA—CIRCLE REPLY CARD NO. 24

Adjustable Drill

. . . two blades, 2 to 4-inch cuts

This adjustable drill cuts any size hole from 2 to 3 inches with one set of blades; holes from 3 to 4 inches with a second blade set. In addition it will cut oversize for clearance or undersize for press fits.

A scroll ring engaging the bot-

tom blade sides performs the double function of adjusting blades and supporting them against thrust of cut. Blades are easily modified to produce round corners, flat bottoms, angular surfaces, steps, etc. Hayden Twist Drill Co., Dept. ST, 8626 Lyndon Ave., Detroit 38, Mich.

FOR MORE DATA—CIRCLE REPLY CARD NO. 25

They're still talking in shops that use

J&L "1200"

COLD FINISHED STEEL

Shop records keep proving the logic of using **J&L "1200"** COLD FINISHED STEEL in terms of

SUPERIOR MACHINABILITY

HIGHEST QUALITY FINISHES

DEPENDABLE UNIFORMITY

EXCEPTIONAL EFFICIENCY

from machines and operations

The list of shops making J&L "1200" Cold Finished Steel a permanent specification keeps growing. Production records prove—again and again—that here is a new, free-cutting steel with exceptional machinability and uniformity.

There are two things you should do today:

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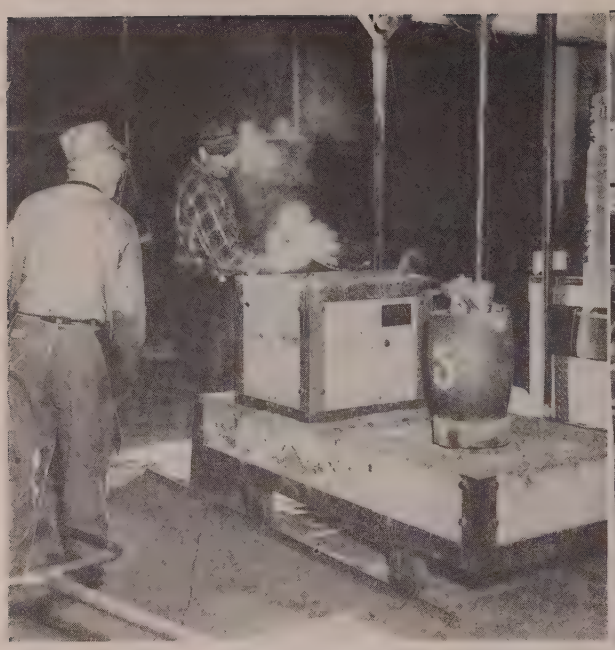
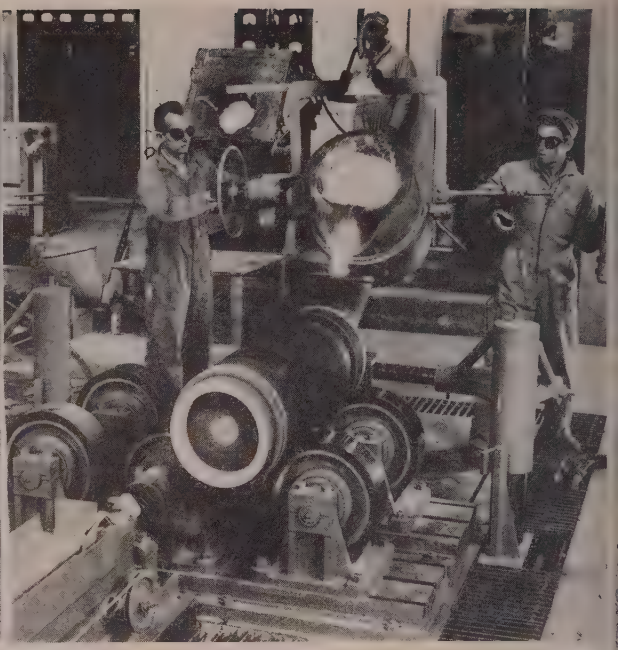


Lift coil induction furnace being used to melt brass. Crucibles may be poured clean or changed, allowing for flexibility in changing analyses and full use of power



Tilting furnace capacities range from 200 pounds to several tons. With 100 kw, they melt 600 pounds of red brass or 720 pounds of yellow brass in one hour

Induction Furnaces . . .

THEY STIR AS THEY MELT BRASS, BRONZE

Heat energy is confined to metal in charge with minimum heat losses through furnace wall, bath surface and inducing coil. Report zinc losses rarely exceed 0.5 per cent

INDUCTION FURNACES, long used to melt alloy steels, more than hold their own against oil, gas, coal and other electric furnaces in the commercial melting of certain brasses, bronzes and other nonferrous metals.

Here's why: They stir as they melt, making for exact analyses and homogeneity of alloys; heat energy is confined to the metal in the charge, with minimum heat losses through the furnace wall, bath surface and inducing coil; waste gases and fumes are substantially eliminated and, compared with other furnaces, melting losses are more predictable and lower.

It's reported that zinc loss in induction furnace brass melts rarely exceeds 0.5 per cent. Hot metal is not exposed to air over large areas or for long periods and arcs or hot spots do not overheat parts of the charge.

Operators also report cooler, cleaner, and much quieter working conditions.

Of course, there are facts to consider on the other side of the balance. Induction units represent higher investment costs, and electricity comes dearer than gas, oil or coal.

However, the ultimate dividend is clear: With proper operaton, the induction furnace can result in appreciable over-all savings.

Furnaces—There are two main types to choose from: The low-frequency unit and the high-frequency unit. Each has inherent plus and minus qualities.

Ajax-Wyatt (or submerged resistor) furnace is a representative low-frequency unit. Operating on a normal frequency supply of alternating current, its melting loop is below the main bath in a generally vertical plane. Other components include the melting hearth, transformer core threading the resistor loop and a primary winding to energize the system.

Ajax-Northrup furnace is a high-frequency type combining practically all the qualities of the low-

By FRANK T. CHESNUT
Ajax Electrothermic Corp.
Trenton, N. J.

Selector Chart for Induction Heating and Melting Equipment

Applications	Power Lines	Motor Generators		Spark Gap Converters Mercury Hydrogen Quenched		Vacuum Tube Converters	
	Unlimited 25-60 cycles	10-1200 Kw (up) 1000 cycles	3000 cycles	10,000 cycles	3-40 Kw 20-80 KC	2-30 Kw 100-500 KC	5-200 Kw (up) 150-540 KC	5-150 MC
Melting								
Charges—30 lb and under			B	B	A	B	B	
30-300 lb		B	A		B			
300 lb—4 tons and up		A	B					
Forging, upsetting, etc. (Ferrous)								
Pieces to ½ in. diam.				C	B	A	A	
½ in. to 1 in. diam.			C	A	A	A	A	
1 in. to 2 in. diam.			A	A	B	B	B	
2 in. to 4 in. diam.		A	A	B	C			
4 in. to 8 in. diam.		A	B					
8 in. diam. and over	B	A						
Forging, upsetting, etc. (Non-Ferrous)								
Pieces to ¼ in. diam.				B		A	A	
¼ in. to ½ in. diam.			C	A	C	A	A	
½ in. to 1 in. diam.		C	A	A	C	C	C	
1 in. to 2 in. diam.		A	A	A				
2 in. to 4 in. diam.	B	A	A	C				
4 in. diam. and over	A	A	B					
Hardening—Very thin case (10-30 mils)							A	
Hardening—Average case (30-60 mils)								
Pieces to 1 in. diam.			C	A	A	A	A	
1 in. to 2 in. diam.			B	A	C	B	B	
2 in. diam. and over		B	A	A			C	
Hardening—Deep case (over 60 mils)								
2 in. to 4 in. diam.		A	A	B	B	B	B	
4 in. diam. and over		A	B	C				
Hardening—Through								
Sheet, thin wall tubes				B	A	A	A	
Pieces to ½ in. diam.				B	A	A	A	
½ in. to 2 in. diam.			A	A	B	B	B	
2 in. diam. and over		A	A	B				
Brazing, soldering, welding								
Small, irregular parts				B	B	A	A	
Large, regular parts		C	A	A			B	
Sintering—Carbides		A	A	A	A	B	C	
High Temperatures (graphite, etc.)		A	A	A	A	B	C	
Vat and autoclave heating	A	B	B	C				
Degassing vacuum tubes						A	A	
Dielectric heating								A
Sheet heating				B			A	
Shrink heating	A	B	B	B	B	B	B	
Annealing-stress relieving	A	B	B	B	B	B	B	
Die heating	A	B	B	B	B	B	B	
Muffle heating (nonconductors)	B	B	B	B	B	B	B	

KEY: Equipment well suited to an application is designated on chart by letter "A". Letters "B" and "C" indicate lesser degrees of suitability. Blank shows suitable equipment is not available for application.

regency unit. It operates on the principle of an air-cored transformer, the charge representing a short-circuited secondary winding of a single turn.

Type One—Submerged resistor furnaces hold up to 10 tons of metal, and power ranges vary from 75 to 400 kw per loop. A large installation, using three 400 kv loops energized simultaneously in a three-phase hookup, has a red brass pouring capacity of 9000 pounds per hour.

Type is best suited for continuous production runs of a single analysis metal. It's ruled out where analysis is changed often or runs are short, because the heel must be kept molten at all times.

Widely used for brass and bronze melting, submerged resistor furnaces recently have been used to melt gray and malleable irons.

Type Two—High-frequency furnaces have capacities of a few ounces to several tons. Smaller units, used primarily for laboratory or small-scale production, operate from spark gap converters at 20 to 40 kc. Larger units operate from motor generators, generally at 1000 to 3000 cycles.

This furnace is more expensive and slightly less efficient than the submerged resistor furnace. Redeeming quality is its flexibility. It can be adapted quickly to almost any foundry requirement.

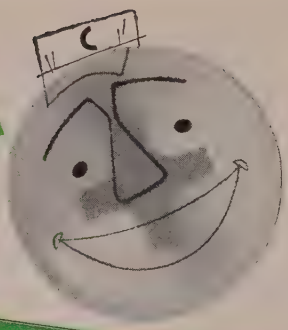
For years, these units have been used for melting the odd lot and specialty bronzes, and, of late, have gained popularity for large production runs of "quality" bronzes. Versatility permits melting of ferrous or nonferrous metal. With slight changes, they may be used for such operations as forging, heat treating and high-temperature work.

Lift or Tilt—Two popular production types are the lift coil and tilting furnaces.

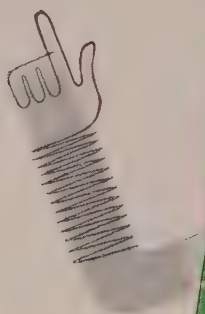
When using the lift coil, the operator lowers the inductor coil over a free-standing, pre-charged, clay-graphite crucible. Crucibles may be poured clean or changed, permitting maximum flexibility in changing analyses and making for maximum use of the power supply. A 100 kw installation will melt 200 pounds of red brass in a No. 70 crucible in a little over 20 minutes. There is practically no warmup or shutdown time.

Tilting furnaces use a sealed-in, clay-graphite crucible or a rammed, non-graphitic type lining. Capacities range from 200 pounds to several tons. With 100 kw, they will melt 600 pounds of red brass or up to 720 pounds of yellow brass per hour. If desired, the same furnace will melt 600 pounds of steel in a little over two hours.

The tilting furnace is less flexible but more efficient than the lift-coil type. It is used for quality bronzes or fussy analysis alloys, where quantities are of the order of several hundred pounds to several tons of metal.



right hand manual
for quick fastener supply



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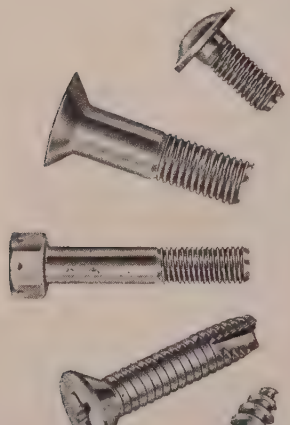

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OF MEETINGS

August 23-26, National Automatic Merchandising Association: Annual convention and exhibit, Hotel Conrad Hilton, Chicago. Association address: 7 S. Dearborn, Chicago. Secretary: C. S. Darling.

September 1-4, American Institute of Electrical Engineers: Pacific general meeting, Hotel Vancouver, Vancouver, B. C. Institute address: 33 W. 39th St., New York 18. Secretary: H. H. Henline.

September 2, Steel Kitchen Cabinet Manufacturers Association: Fall meeting, Hotel Cleveland, Cleveland. Association address: 1008 Engineers Bldg., Cleveland 14. Secretary: Arthur J. Tuscany Jr.

September 4-13, European Machine Tool Exhibition: Brussels, Belgium.

September 6-11, American Chemical Society: Fall meeting, Hotel Conrad Hilton, Chicago. Society address: 1155—16th St., NW, Washington 6. Assistant secretary: R. M. Warren.

September 9, Material Handling Institute: Fall meeting, Hotel Cleveland, Cleveland. Institute address: 813 Clark Bldg. Pittsburgh 22. Managing director: R. Kennedy Hanson.

September 9-11, Compressed Air & Gas Institute: Fall meeting, Fishers Island Country Club, Fishers Island, N. Y. Institute address: 122 E. 42nd St., New York 17. Secretary: Frank P. Anderson.

September 10-12, Rocky Mountain Management Club: Rocky Mountain industrial exposition, University of Denver arena. Club address: 1031 15th St., Denver 2. Executive secretary-treasurer: Harold S. Craig.

September 11-13, Metal Powder Association: Fall meeting, The Greenbrier, White Sulphur Springs, W. Va. Association address: 420 Lexington Ave., New York 17. Secretary: Robert L. Ziegfeld.

September 13-16, Electrochemical Society Inc.: Fall meeting, Ocean Terrace hotel, Wrightsville Beach, N. Carolina. Society address: 216 W 102nd St., New York 25. Secretary: Dr. Henry B. Linford.

September 13-16, American Institute of Chemical Engineers: Fall meeting, Hotel Fairmont, San Francisco. Institute address: 120 E. 41st St., New York 17. Secretary: Stephen L. Tyler.

September 14-15, American Machine Tool Distributors Association: Annual meeting. The Greenbrier, White Sulphur Springs, W. Va. Association address: 1900 Arch St., Philadelphia 3. Executive secretary: Thomas A. Fernley Jr.

September 14-15, American Hot Dip Galvanizers Association Inc.: Semi-annual meeting, Statler Hotel, Cleveland. Association address: 1506 First National Bank Bldg., Pittsburgh 22. Secretary-treasurer: Stuart J. Swensson.

September 14-16, Allied Railway Supply Association: Annual meeting, Hotel Sherman, Chicago. Association address: 1200 W. Chase Ave., Chicago 26. Secretary: Charles F. Weil.

September 14-18, Industrial Engineering Conference: Michigan State College, East Lansing, Mich. Information: James M. Apple, Dept. of Mechanical Engineering, Michigan State College, East Lansing, Mich.

September 16-18, Porcelain Enamel Institute: Shop practice forum, Ohio State University, Columbus, O. Institute address: 1346 Connecticut Ave., NW, Washington 6. Secretary: John C. Oliver.

September 17-18, National Foundry Association: Annual meeting, Plaza hotel, New York. Association address: 53 W. Jackson Blvd., Chicago 4. Executive secretary: Charles T. Sheehan.

September 18-19, American Ceramic Society: Refractories Division meeting, Bedford Springs Hotel, Bedford, Pa. Society address: 2525 N. High St., Columbus 2, O. General secretary: Charles S. Pearce.

September 20-23, National Metal Trades Association: Eastern plant management conference, Sagamore hotel, Lake George, N. Y.

Association address: 122 S. Michigan Ave., Chicago 3. Commissioner: Charles L. Blatchford.

eptember 20-23, Packaging Machinery Manufacturers Institute: Annual meeting, Skytop Lodge, Skytop, Pa. Institute address: 342 Madison Ave., New York 17. Secretary-treasurer: Helen L. Stratton.

eptember 20-23, American Institute of Wholesale Plumbing & Heating Supply Associations Inc: Annual convention, Hotel Waldorf-Astoria, New York. Institute address: 402 Albee Bldg., Washington. Executive secretary: George T. Underwood.

eptember 21, Cutting Tool Manufacturers Association: Fall meeting, Lochmoor Club, Detroit. Association address: 416 Penobscot Bldg., Detroit 26. Secretary: M. J. Ewald.

eptember 21-23, Steel Founders' Society of America: Fall meeting, The Homestead, Hot Springs, Va. Society address: 920 Midland Bldg., Cleveland. Secretary: F. Kermit Donaldson.

September 21-23, Truck Body & Equipment Association Inc.: Annual meeting, Sheraton-Gibson hotel, Cincinnati. Association address: 1122 DuPont Circle Bldg., Washington 6. Executive manager: Arthur J. Nuesse.

September 21-24, American Mining Congress: Annual metal and nonmetallic mineral mining convention, Olympic hotel, Seattle. Congress address: 1102 Ring Bldg., Washington 6. Executive vice president: Julian D. Conover.

September 21-25, Instrument Society of America: National instrument conference and exhibit. Hotels Morrison and Sherman, Chicago. Society address: 1319 Allegheny Ave., Pittsburgh. Manager: P. V. Jones Jr.

September 23-25, National Industrial Conference Board Inc.: General session for all associates on marketing. Hotel Waldorf-Astoria, New York. Board address 247 Park Ave., New York 17. Secretary: Herbert S. Briggs.

September 23-26, National Association of Foremen: Annual convention, Milwaukee. Association address: 321 W. 1st St., Dayton 2, O.

September 24-27, American Refractories Institute: Fall Meeting, Broadmoor hotel, Colorado Springs, Colo. Institute address: 1872 Railway Exchange Bldg., St. Louis 1. President: W. J. Westphalen.

September 25, Malleable Founders' Society: General meeting, Hotel Cleveland, Cleveland. Society address: 1800 Union Commerce Bldg., Cleveland 14. Managing director: Lowell D. Ryan.

September 28-30, American Management Association: Personnel conference, Hotel Statler, New York. Association address: 330 W. 42nd St., New York 36. President: Lawrence A. Appley.

September 28-30, National Electronics Conference Inc.: Annual conference, Hotel Sherman, Chicago. Conference address: 852 E. 83rd St., Chicago. Executive secretary: Karl Kramer.

September 28-October 1, Association of Iron & Steel Engineers: Annual meeting, Hotel William Penn, Pittsburgh. Association address: 1010 Empire Bldg., Pittsburgh. Managing director: T. J. Ess.

September 29-October 3, Society of Automotive Engineers: National aeronautics meeting, aircraft engineering display and aircraft production forum, Hotel Statler, Los Angeles. Society address: 29 W. 39th St., New York 18. Secretary: John A. C. Warner.

September 30-October 2, Porcelain Enamel Institute: Annual meeting, The Greenbrier, White Sulphur Springs, W. Va. Institute address: 1346 Connecticut Ave., NW, Washington 6. Secretary: John C. Oliver.

October 1, American Iron & Steel Institute: Youngstown regional technical meeting, Hotel Pick-Ohio, Youngstown. Institute address: 350 Fifth Ave., New York 1. Secretary: George S. Rose.

October 5-7, American Society of Mechanical Engineers: Fall meeting, Hotel Sheraton, Rochester, N. Y. Society address 29 W. 39th St., New York 18. Secretary: C. E. Davies.

October 19-23, National Metal Congress & Exposition: Public auditorium, Cleveland. Information: W. H. Eisenmann, secretary, American Society for Metals, 7301 Euclid Ave., Cleveland 3.

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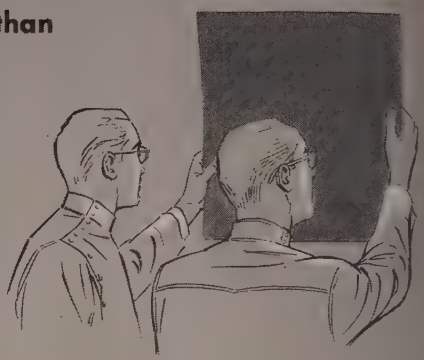

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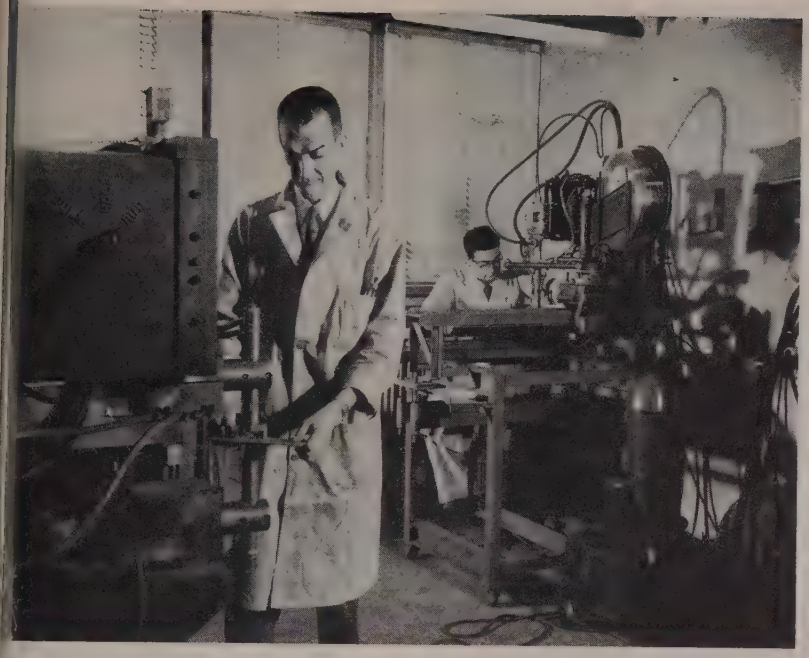

New Research Lab for Allegheny Ludlum

Weldability characteristics of high alloy steels is an important phase of the applied research conducted in this welding section of the new Vere B. Browne research laboratory at Allegheny Ludlum's Brackenridge, Pa., works. In foreground is electronic spotwelder; inert arc welder in background

Corrosion Study Of Low-Alloy Steels In Soils

While not inherently corrosion resistant, low-alloy steels develop layer of corrosion products which greatly reduces further action. Molybdenum trace reduces pitting

EXTENSIVE use of low-alloy, high-strength steels in many kinds of above-ground construction is based largely on the fact that these steels corrode more slowly than plain carbon steels under most atmospheric conditions.

Unlike steels containing high percentages of alloying metals, low-alloy steels are not inherently resistant to corrosion. Instead, they owe their corrosion resistance to the development of an adherent layer of corrosion products, which reduces further corrosion to a negligible or at least tolerable rate.

Thirteen-Year Study—A recent study by the National Bureau of Standards provides new information on the corrosion of certain low-alloy irons and steels in soils. Specimen plates of several of these materials (containing up to about 6 per cent of total alloying elements) together with reference specimens of plain steel, were buried at 15 different test sites for periods up to 13 years.

Included in the Bureau's study were specimens of copper-molybdenum open-hearth irons, nickel-copper steels, and chromium steels with and without molybdenum. Sets of specimens were removed at regular intervals over the 13-year period, and after removal of corrosion products the weight losses and depths of the deepest pits were measured.

Weight Loss vs. Pitting—Steels containing 4 to 6 per cent of chromium generally lost only about half as much weight as did plain steel under the same conditions. However, the greater corrosion resistance of the alloy steels as measured by weight loss was not generally accompanied by a corresponding reduction in the maximum depth of pits. Least pitting was observed on specimens that contained molybdenum in addition to chromium.

Change in the rate of pitting with time was found to depend on the composition of the steel. Although the initial rate of pitting was greater for the alloy steels the depths of the deepest pits in the alloy steels were usually less than in the plain steel. This indicates that after the maximum period of exposure the alloying constituents induce the formation of corrosion products which tend to reduce the rate of pitting with time.

Alloys Pit More—In an environment unfavorable to the development of protective deposits of corrosion products, the alloy steels could be expected to develop deeper pits than plain steel because the greater initial rate of pitting of the alloy steels would tend to be maintained. This tendency toward accelerated pitting of alloy steels was actually observed in a few highly reducing soils in which the deposition of a protective scale was impossible because of the solubility of the corrosion products.

Provided their corrosion resistance in a prospective environment is sufficient, low alloy steels may be of interest for certain applications because of their high strength. The NBS study indicates that alloy steels may in some cases be appropriate choices for certain types of underground construction, such as piling, in which mechanical strength, rather than ability to contain a fluid indefinitely without leakage, is of primary importance. However, whether the superior properties of an alloy steel justify its higher initial cost should be given due consideration.

Speedy Indexing Machine

Specially-designed fixtures and multiple spindle heads account for the high rate of production on a new automatic 6-station indexing type machine built by Turner Bros. Inc., Ferndale, Mich. It drills, reams, mills and countersinks steering gear pistons at the rate of 440 per hour. Indexing table is dead-center, and mounts a stationary cam track.

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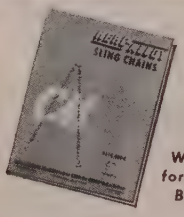
HERC-ALLOY
SLING CHAINS



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OPEN HEARTH CHALLENGED . . .

Continued from p. 88

made in an arc furnace in about 30 minutes.

Nitrogen — Problem of nitrogen pickup in the electric furnace has some steel men wondering. The Battelle report is optimistic on this point. Nitrogen fixation in electric alloy steels will not necessarily carry over to carbon steels. The absence of chromium and other alloying elements discourages formation of stable nitrides.

In a modern top charge arc furnace, air infiltration during melting is kept at a minimum so that nitrogen fixation by the arc may be kept at a minimum. Importance of producing an active boil must be recognized in future arc furnace steelmaking, particularly on grades adversely affected by nitrogen.

Scrap vs. Pig—Future comparative prices of steel scrap and pig iron will have a marked effect on the economics of the electric furnace versus the open hearth for nonintegrated steel plants. With the probability that use of greater proportions of taconite concentrates or imported ores will increase somewhat the cost of pig iron, there is a good chance that an increase in the spread between prices of scrap and cold pig in the future will favor the electric furnace in the nonintegrated plant. For large tonnage production using hot-metal practice, any change in this price relationship should have little effect one way or the other.

Adaptation of the electric furnace to hot-metal practice utilizing duplex processes may offer further economies. In view of the high cost thermal energy of electric steel practice, compared with the open hearth, electrics stand to gain more from the application of a duplex practice such as the intermediate bessemer than does the open hearth. Such practice in an integrated mill may reduce the cost of electric steelmaking below that of the open hearth.

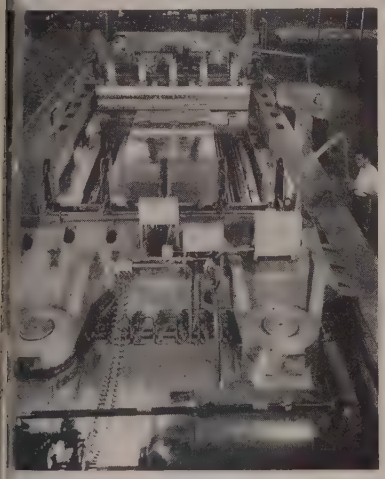
Not to be written off is a duplex practice based on combination of the turbohearth and electric furnace, which, compared with bessemer duplexing, would have the advantage of removing phosphorus and part of the sulphur as well as keeping the nitrogen low.

retching Aluminum Plate

RETCHER with 5 million unds capacity, has been installed the Trentwood, Wash., rolling ll of Kaiser Aluminum & Chemi- Corp. for stretching high- ength aluminum alloy plate. rst deliveries of plate processed it have already been made to craft manufacturers.

Purpose of the giant machine is flatten plate and relieve residual resses in the metal resulting from lling and heat treatment. Stretch- g provides material that may be achined by the user with mini- um of distortion.

Structural Trend—This is an ad- ntage to the airframe industry cause of the trend toward the e of machined, integrally-stif- ned structures such as large



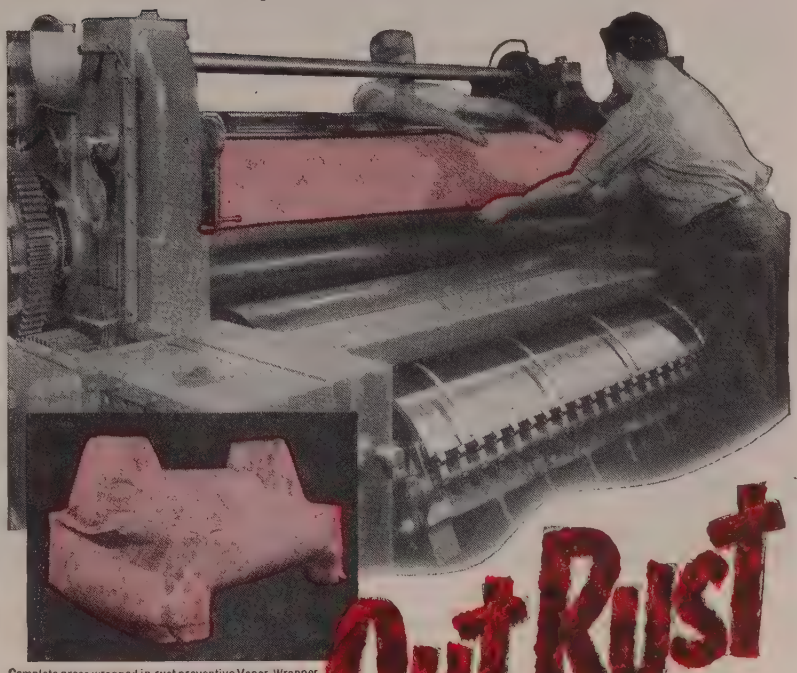
METAL-STRETCHING GIANT
. . . *minimizes machining distortion*

ving panels instead of sections nade up of a large number of ieces riveted together.

Amount of the stretch given to he plate can be accurately con- rolled. Uniform strain is exerted over the entire plate at one time, whereas other flattening methods work a local area progressively. Result of stretching produces uni- form properties throughout plate.

Hydraulic Operation — The stretcher, which is operated hy- draulically, will take plate up to 2 inches thick and 40 feet long. Overall dimensions of the machine are: Length, 81 feet, width, 18 feet, height at highest point, 9 feet, 2 inches; weight, 275 tons; stretching stroke, 7 feet.

How Miehle Cuts Packaging Costs, Improves Customer Service!



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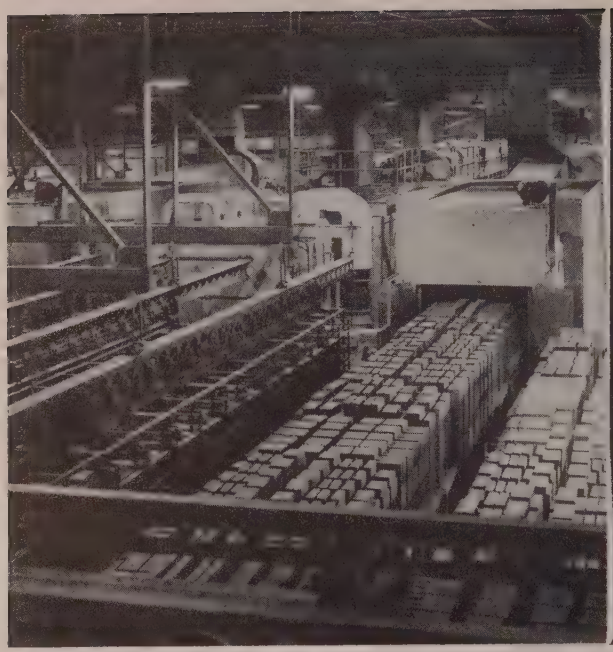
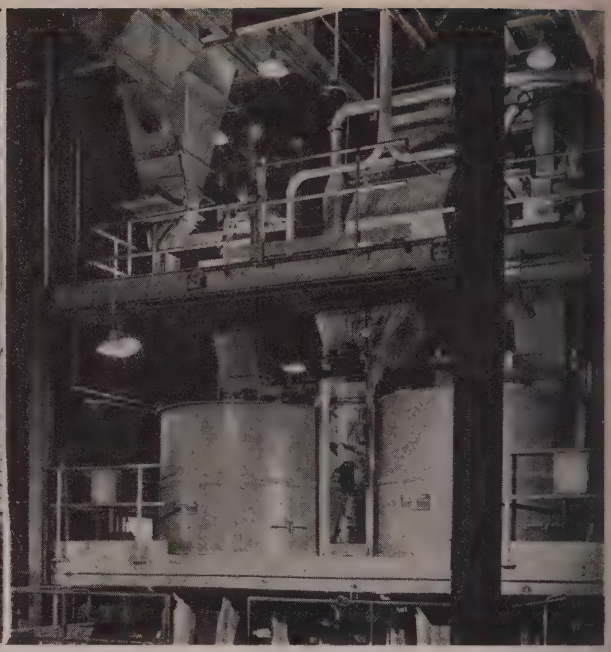


Unburned brick, stacked on kiln cars, moves into dryer at right. Racks loaded with special refractory shapes move on monorail tracks through furnace at the left



Tram buckets are shown in the raised position having just returned from dumping mix into press hoppers. They will be lowered into pit below mixers for next load

Bulk Materials Handling:

IT CAN BE DONE CLEANLY

Harbison-Walker prove it in their new Windham, O., plant where crushed silica and binders are combined automatically. There's hardly enough dust to sneeze at

WHAT ordinarily ought to be a hot, dusty operation is neither at the new $6 million Windham, O., plant of Harbison-Walker Refractories Co. How do they turn out thousands of silica bricks in the average day in a cool, clean atmosphere? Some advanced thinking in the materials handling is the answer.

Here's a plant that takes in several hundred tons of crushed silica conglomerate rock, screens and grinds it to powder, mixes it with high-calcium hydrated lime that is of powder consistency, and presses it into brick which is kiln-dried and fired.

Equipment Maze—One look inside the plant's unimposing exterior is sufficient for even the layman to understand high initial cost. Just about every conceivable type of handling equipment is used to completely integrate the system.

First to touch the crushed rock, after company-owned trucks deliver it from the quarry six miles to the north, is the apron feeder which provides steady flow to a bucket elevator for distribution to the raw stock bins at the top of the raw materials building.

Air Conveyor—Lime, used as a bonding agent, is delivered by railroad hopper cars to special siding that parallels the Erie mainline. It is loaded into a silo and delivered to bins near the mixers by means of an air conveying system.

From the raw material bins, crushed rock is fed by electrically vibrating feeders to totally-enclosed dry-pan grinding mills. Grinding products are divided by sizing screens into several fractions which are distributed by chutes or conveyor belts to various compartments of the ground material bins.

A measured portion of the material from the dry pans, is fed to ball mills on a carefully-regulated belt feeder for fine grinding. Interesting feature of the ball mill is the "electric ear" control. Change in sound level as material is ground fine activates the feeder belt which in turn adds more material to the mill. Another electric device, mag-

There's no substitute for manual labor when bricks cool sufficiently for removal from line of kiln cars. But stacking onto fork lift pallets held at convenient working height eases handling, storage and shipment problems

etic separators, detect and remove any iron prior to every screening operation.

Batching — With material all round and sized, next step is reassembling the various fractions in proper proportions. Up to now all operations have been continuous, but preparation of stock for mixing is necessarily a batch process.

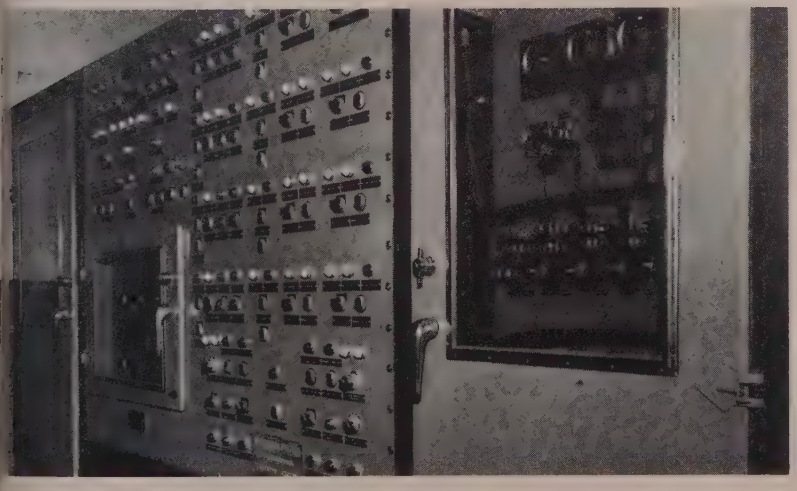
Material is automatically discharged from the selected bins according to the proportions, by weight, set up on the master control board. It can be delivered to any of several mixers by adjustment of the controls. If any portion of the batching is interrupted, system automatically shuts itself down, sounds a warning horn, and indicates on the board where the trouble lies.

Mixing — Batch is given final preparation for molding in totally-enclosed mixers which are connected to the batching system so as to receive all of the materials in predetermined sequence. Mixing times for various proportions of silica, water and binders are all standardized.

Timing sequence dumps the mixed material into tram buckets after alloted time has elapsed. When filled, buckets are hoisted to the tramming level some 40 feet above floor level where tram locomotive switches them over to hopper feeds above presses and special- shape molding stations. Buckets are dumped electrically and returned to mixing station where they are again lowered into the receiving position.

Pressing and Drying — Feed to the power and impact presses is by controlled belts. After pressing, brick are delivered from press by standard pushers or mechanical pickers, and press operators set brick directly on the tunnel kiln cars. Larger and more intricate shapes are set on pallets which are then placed on monorail rack cars instead of kiln cars.

Loaded kiln cars are moved to drying kilns by means of transfer cars and gasoline-driven pushers. Car of green brick is pushed



Control panel for automatic batching and mixing is housed in this air conditioned control room. The lights show what is taking place at all times

Another good way to put the skids under your handling costs

Through the packaging magic of Signode Steel Strapping!

Shown here is a successful adaptation by Signode of a *basic* skid-loading method, made for a shipper of tin plate.

This commodity can easily be a shipper's headache. It is heavy and slippery, and its surfaces are vulnerable — easily dented and scratched.

So Signode engineers wrapped each unit in heavy, moisture-repellent kraft paper, placed metal protectors on the edges, and fastened it to a skid with Signode Steel Strapping. Results? Safer, easier handling at lower cost!

Can Signode help you cut handling and shipping costs through practical adaptations of one or more *basic* skid-loading methods? *It costs you nothing to find out!* Write Signode Steel Strapping Co., 2645 N. Western Ave., Chicago 47, Ill. Offices coast to coast. In Canada: Canadian Steel Strapping Co., Ltd. Foreign subsidiaries and distributors world-wide.

SIGNODE Steel Strapping Co.

SEND FOR FOLDER SHOWING 6 BASIC WAYS OF UNITIZING

into kiln which in turn forces a car at the other end to be ejected. In the case of racks of special shapes moving on mono-rails, these are automatically pushed through dryer after which the shapes are removed and reset on tunnel kiln cars for firing, or they are placed in one of the two periodic kilns used for non-uniform shapes.

Tunnel Kilns—Firing kilns are 567 feet long and are located in line with dryers so that little heat is lost when cars are moved from one to the other. Each holds 81 cars which enter at a temperature of 200-300° F, are gradually heated to the "killed" temperature of 2900° F and then cooled to 200-300° F by the time they reach the exit portal. Control instrumentation allows operator to set up various firing curves for different shapes and mixtures.

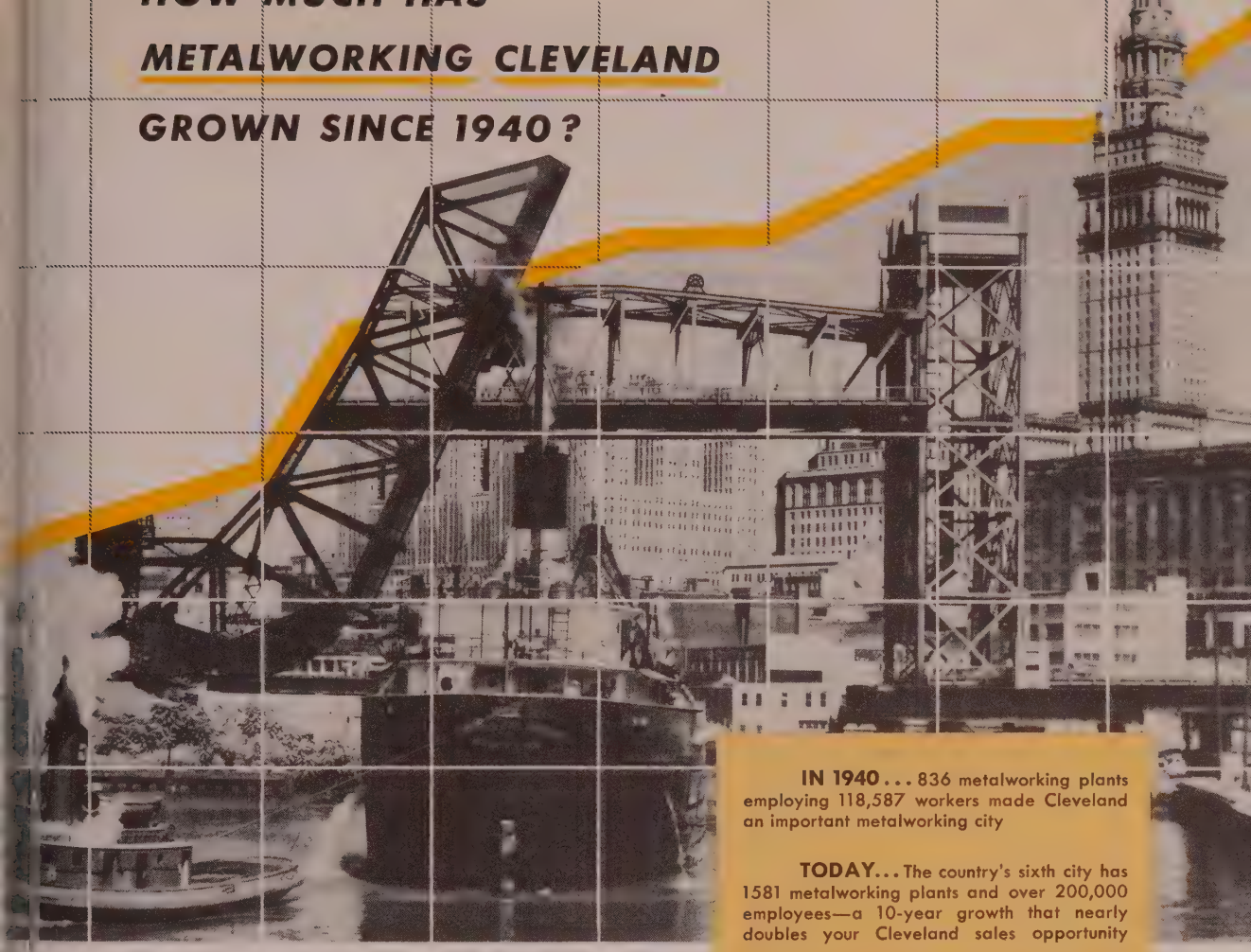
Cars are ejected one at a time as a new one is pushed into the kiln. Each finished car is moved by transfer mechanism to a track parallel to the kilns and adjacent to the stock sheds.

Dust Control — Dust collection in an operation of this kind is a must for two reasons. Of primary concern is the health hazard resulting in the lung disorder known as silicosis. Another consideration is the material loss itself. Recovered dust has accounted for as much as 15 per cent of the total raw material weight at the plant.

Dust collecting system is divided into two parts, one collecting from the raw material processing equipment, and one from the grinding equipment. Either system can be operated independently, and collected material from the vacuum systems is fed into hoppers from where it is combined with the ball-mill product for later blending into batches.

Unloading and Shipping—Plant was laid out with purpose of handling as high a percentage of palletized shipments as possible. Design of the whole plant, in fact, emphasizes handling by lift trucks, as is evidenced by the one-level construction of the main working area. After cooling, bricks are manually stacked on pallets held at convenient work height by fork trucks. An increasing percentage of shipments are made in this palletized form.

HOW MUCH HAS METALWORKING CLEVELAND GROWN SINCE 1940?



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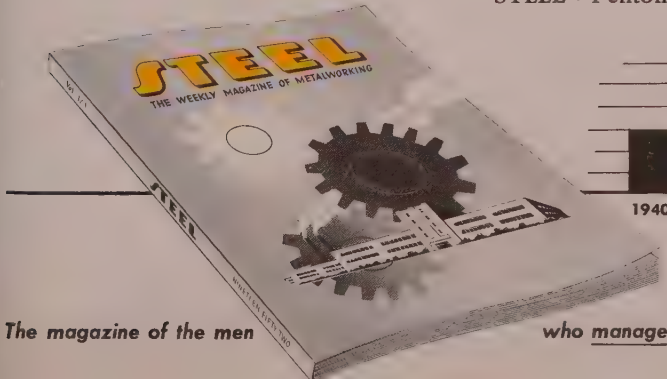

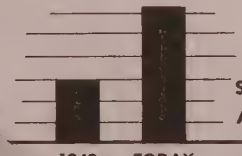

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The magazine of the men who manage, operate and buy for the Metalworking industry

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LEADERS IN IRON AND STEEL SCRAP SINCE 1889

STEEL
August 24, 1953

Market Outlook

STEEL USERS are not placing orders as far ahead as they were, but that doesn't necessarily forecast a sharp cut in steel consumption.

It could mean consumers just think steel will be more readily available in the fourth quarter of this year than it has been. They're inclined to think this way because: 1. The war emergency has faded away; 2. steel producing capacity has increased; 3. demand that accumulated for goods during World War II and the Korean war has been satisfied; 4. end of the Korean war inspired an increase in caution among businessmen; and 5. the "pipelines" of steel distribution are filling up.

BUYERS' REACTIONS— When you think something will be readily available you're not inclined to order it far in advance of needs. When you have to order something far ahead of needs the consumption may be low because of lack of supply. Remember when shortly after World War II you had to order an automobile a year in advance of delivery? Passenger auto output then was less than half what it is today, and you don't have to order a year ahead now.

REMEMBER WHEN?— It used to be considered normal in the steel industry to receive orders only a short time ahead of delivery.

The tendency not to order steel so far ahead is increasingly apparent in fourth-quarter order books. The caution is being displayed even on the heavy-in-demand products like large carbon bars and hot-rolled and cold-rolled carbon sheets.

INFLUENCES— Possibility of a stretch-out in shell work before the end of the year and cutbacks from the auto industry as a direct result of the General Motors fire at Livonia, Mich., are helping influence buyers to move a little more slowly on future commitments for large bars.

A few spot mill offerings of hot-rolled and cold-rolled carbon sheets are developing, but these are being snapped up quickly.

BOOKED UP—Most producers of steel plates see enough work ahead to insure active operations the rest of this year.

Similarly, most shops that fabricate structural shapes for the construction trade have comfortable backlogs of orders, the exceptions being mainly among the smaller shops.

Wire, a product that has been in fairly easy supply for some time, continues that way.

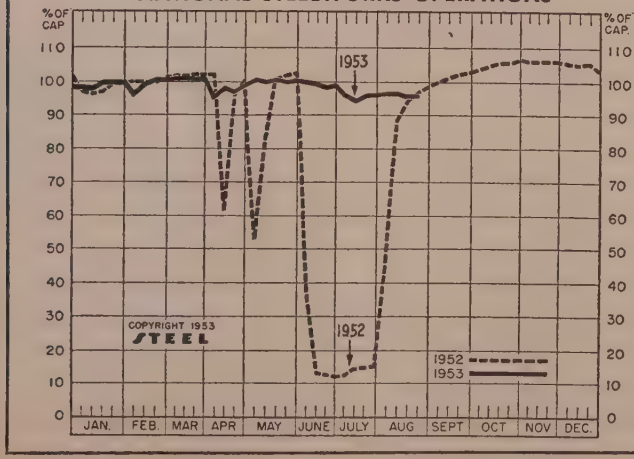
GETTING CHOOSY—While warehouses (they supply the small consumers of steel) do not have all of the inventories they would like they do see some improvement and are increasingly choosy in what they will accept from the mills.

Pig iron demand, which has been soft for some time, continues to lag.

Tin plate demand has not equaled supply, and right now that product is experiencing a seasonal lull. Price action on tin plate will occur Oct. 1. That product is sold on six-months contracts. Consequently, the price of it did not change in June when other steel prices went up. In determining the price for Oct. 1, tin plate producers will have to consider that the cost of steel is up and that the cost of tin is down.

STEADY PACE—Reflecting the fullness of third-quarter order books for steel, the output of steel for ingots and castings in the week ended Aug. 22 held steady at 96 per cent of capacity.

NATIONAL STEELWORKS OPERATIONS



DISTRICT INGOT RATES

(Percentage of capacity engaged at leading production points)

	Week Ended Aug. 22	Change	Same 1952	Week 1951
Pittsburgh	93.5	0*	95.5	98
Chicago	102	— 2*	99.5	104
Mid-Atlantic	96	0	91	100.5
Youngstown	106	+ 3	106	101
Wheeling	92	— 3.5	93.5	98.5
Cleveland	102.5	0	105.5	104.5
Buffalo	106.5	0	104	27.5
Birmingham	94	— 0.5	100	100
New England	90	0	92	89
Cincinnati	91.5	+ 0.5	60	101
St. Louis	103	0	104	93
Detroit	109	+ 1*	106	106
Western	102.5	0	103.5	105
Estimated National Rate	96	0	97	98

*Change from preceding week's revised rate.

Weekly steelmaking capacity is estimated at 2,254,459 net tons in 1953; 2,077,040 tons in 1952; 1,999,034 tons in 1951.

PRICE INDEXES AND COMPOSITES

AVERAGE PRICES OF STEEL (Bureau of Labor Statistics) Week Ended Aug. 18, 1953

Prices include mill base prices and typical extras and deductions. Units are 100 lb except where otherwise noted in parentheses. For complete description of the following products and extras and deductions applicable to them, write to STEEL.

Rails, standard, No. 1	$4.400	Bars, H.R., alloy	$8.675	Strip, C.R., stainless, 430 (lb)	$0.415	Tin plate, hot-dipped, 1.25 lb	$8.433
Rails, light, 40 lb	5.767	Bars, H.R., stainless, 303 (lb)	0.418	Strip, H.R., carbon	5.113	Tin plate, electrolytic, 0.25 lb	7.133
Tie Plates	5.125	Bars, H.R., carbon	4.850	Pipe, black, buttweld (100 ft)	14.454	Black plate, can making quality	6.233
Axles, railway	7.250	Bars, reinforcing	4.775	Pipe, galv., buttweld (100 ft)	17.895	Wire, drawn, carbon	7.713
Wheels, freight car, 33 in. (per wheel)	47.000	Bars, C.F., carbon	7.860	Pipe, line (100 ft)	141.960	Wire, drawn, stainless, 430 (lb)	0.545
Plates, carbon	4.550	Bars, C.F., alloy	11.075	Casing, oil well, carbon (100 ft)	149.516	Bale ties (bundle)	5.853
Structural Shapes	4.383	Bars, C.F., stainless, 302 (lb)	0.433	Casing, oil well, alloy (100 ft)	214.113	Nails, wire, 8 d common	7.530
Bars, tool steel, carbon (lb)	0.415	Sheets, H.R., carbon	4.765	Tubes, boiler (100 ft)	‡	Wire, barbed (80-rod spool)	6.847
Bars, tool steel, alloy, oil hardening die (lb)	0.505	Sheets, C.R., carbon	5.904	Tubing, mechanical, carbon (100 ft)	‡	Woven wire fence (20-rod roll)	16.174
Bars, tool steel, H.R. alloy, high speed W 6.75, Cr 4.5, V 2.1, Mo 5.5, C 0.60 (lb)	1.094	Sheets, galvanized	7.015	Tubing, mechanical, stainless, 304 (100 ft)	161.193	‡Not available.	
Bars, tool steel, H.R. alloy, high speed W18, Cr 4, V 1 (lb)	1.730	Sheets, C.R., stainless, 302 (lb)	0.548				
		Sheets, electrical	9.183				
		Strip, C.R., carbon	7.371				

FINISHED STEEL PRICE INDEX (Bureau of Labor Statistics)

	Aug. 18 1953	Aug. 11 1953	Month Ago	July Average
(1947-1949=100)	141.7	141.7	141.7	141.7

STEEL's FINISHED STEEL PRICE INDEX

	Aug. 20 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Index (1935-39 av.=100)	189.38	189.38	189.33	181.31	143.08
Index in cents per lb.	5.130	5.130	5.129	4.912	3.876

STEEL's ARITHMETICAL PRICE COMPOSITE*

	Aug. 20 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Finished Steel, NT	$115.56	$115.56	$114.88	$110.98	$95.05
No. 2 Fdry, Pig Iron, GT	56.54	56.54	56.54	55.04	44.30
Basic Pig Iron, GT	56.04	56.04	56.04	54.66	43.86
Malleable Pig Iron, GT	57.27	57.27	57.27	55.77	44.68
Steelmaking Scrap, GT	43.17	44.17	43.42	43.00	43.33

*For explanation of weighted index see STEEL, Sept. 19, 1949, p. 54; of arithmetical price composite, STEEL, Sept. 1, 1952, p. 130.

COMPARISON OF PRICES

Comparative prices by districts, in cents per pound except as otherwise noted. Delivered prices based on nearest production point.

FINISHED STEEL

	Aug. 20 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bars, H.R., Pittsburgh	4.15	4.15	4.15	3.95	3.45
Bars, H.R., Chicago	4.15	4.15	4.15	3.95	3.35
Bars, H.R., del. Philadelphia	5.302	5.302	5.302	4.502	3.79
Bars, C.F., Pittsburgh	5.20	5.20	5.20	4.925	3.95
Shapes, Std., Pittsburgh	4.10	4.10	4.10	3.85	3.25
Shapes, Std., Chicago	4.10	4.10	4.10	3.85	3.25
Shapes, deld., Philadelphia	4.38	4.38	4.38	4.13	3.48
Plates, Pittsburgh	4.10	4.10	4.10	3.90	3.50
Plates, Chicago	4.10	4.10	4.10	3.90	3.40
Plates, Coatesville, Pa.	4.35	4.35	4.35	4.35	3.75
Plates, Sparrows Point, Md.	4.10	4.10	4.10	3.90	3.45
Plates, Claymont, Del.	4.55	4.55	4.55	4.35	3.95
Sheets, H.R., Pittsburgh	3.925	3.925	3.925	3.775	3.275
Sheets, H.R., Chicago	3.925	3.925	3.925	3.775	3.25
Sheets, C.R., Pittsburgh	4.775	4.775	4.775	4.575	4.00
Sheets, C.R., Chicago	4.775	4.775	4.775	4.575	4.00
Sheets, C.R., Detroit	4.975	4.975	4.975	4.775	4.20
Sheets, Galv., Pittsburgh	5.275	5.275	5.275	5.075	4.40
Strip, H.R., Pitts.	3.975-4.425	3.975-4.425	3.975-4.425	3.75-4.225	3.275
Strip, H.R., Chicago	3.925	3.925	3.925	3.725	3.275
Strip, C.R., Pittsburgh	5.45-5.95	5.45-5.95	5.45-5.95	5.10-5.80	4.00
Strip, C.R., Chicago	5.70	5.70	5.70	5.35	4.125
Strip, C.R., Detroit	5.45-6.05	5.45-6.05	5.45-6.05	5.30-6.05	4.20
Wire, Basic, Pitts.	5.475-5.525	5.475-5.525	5.475-5.525	5.10-5.225	4.15
Nails, Wire, Pittsburgh	6.35-6.55	6.35-6.55	6.35-6.55	6.20-6.35	5.15
Tin plate (1.50 lb), box, Pitts.	$8.95	$8.95	$8.95	$8.95	$6.70

SEMIFINISHED STEEL

Billets, forging, Pitts. (NT)	$75.50	$75.50	$75.50	$70.50	$61.00
Wire rods, ½-⅝", Pitts.	4.525	4.525	4.525	4.325	3.45

PIG IRON, Gross Ton

	Aug. 20 1953	Week Ago	Month Ago	Year Ago	5 Yrs. Ago
Bessemer, Pitts.	$57.00	$57.00	$57.00	$55.50	$47.00
Basic, Valley	56.00	56.00	56.00	54.50	43.00
Basic, deld. Phila.	60.75	60.75	60.75	59.25	46.17
No. 2 Fdry, Pitts.	56.50	56.50	56.50	55.00	46.50
No. 2 Fdry, Chicago	56.50	56.50	56.50	55.00	43.25
No. 2 Fdry, Valley	56.50	56.50	56.50	55.00	43.50
No. 2 Fdry, deld. Phila.	61.25	61.25	61.25	59.75	46.67
No. 2 Fdry, Birm.	52.88	52.88	52.88	51.38	43.38
No. 2 Fdry (Birm.) del. Cin.	60.43	60.43	60.43	58.93	49.09
Malleable, Valley	56.50	56.50	56.50	55.00	43.50
Malleable, Chicago	56.50	56.50	56.50	55.00	43.50
Ferromanganese, Etna, Pa.	200.00†	200.00†	200.00†	228.00*	148.00*

*78-82% Mn, per gross ton. †74-76% Mn, per net ton.

SCRAP, Gross Ton (Including broker's commission)

No. 1 Heavy Melt, Pitts.	$45.50	$45.50	$44.50	$44.00	$42.75
No. 1 Heavy Melt, E. Pa.	42.50	43.50	44.25	41.50	45.50
No. 1 Heavy Melt, Chicago	41.50	43.50	41.50	42.50	41.75
No. 1 Heavy Melt, Valley	45.50	45.50	45.50	44.00	42.75
No. 1 Heavy Melt, Cleve.	44.50	44.50	45.50	43.00	42.25
No. 1 Heavy Melt, Buffalo	43.75	43.75	43.75	43.00	46.25
Rails, Rerolling, Chicago	56.00	57.50	54.50	52.50	63.25
No. 1 Cast, Chicago	42.00	42.00	41.00	50.00	70.00

COKE, Net Ton

Beehive, Furn, Connlsvl.	$14.75	$14.75	$14.75	$14.75	$14.25
Beehive, Fdry, Connlsvl.	16.75	16.75	16.75	17.00	17.00
Oven Fdry, Chicago	24.50	24.50	24.50	23.00	20.40

NONFERROUS METALS

(Cents per pound, carlots, except as otherwise noted)

PRIMARY METALS AND ALLOYS

Aluminum: 99% plus, ingots 21.50, pigs 20.00, 10,000 lb or more, f.o.b. shipping point. Freight allowed on 500 lb or more.

Aluminum Alloy: No. 13, 12% Si, 23.30; No. 43, 5% Si, 23.10; No. 142, 4% Cu, 24.40; No. 195, 4.5% Cu, 0.8% Si, 23.70; No. 214, 3.8% Mg, 24.40; No. 356, 7% Si, 0.3% Mg, 23.20.

Antimony: R.M.M. brand, 99.5% 34.50. Lone Star brand, 35.00, f.o.b. Laredo, Texas, in bulk. Foreign brands, 99.5%, 26.00-27.00 New York, duty paid, 10,000 lb or more.

Beryllium: 97%, lump or beads, $71.50 per lb f.o.b. Cleveland or Reading, Pa.

Beryllium Aluminum: 5% Be, $72.75 per lb of contained Be, f.o.b. Reading, Pa.

Beryllium Copper: 3.75-4.25% Be, $40.00 per lb of contained Be, with balance as Cu at market price on shipment date, f.o.b. Reading, Pa. or Elmore, O.

DAILY NONFERROUS PRICE RECORD

	Price Aug. 20	Last Change	Previous Price	July Avg.	June Avg.	July, 1952 Avg.
Copper	29.00-30.00	Aug. 19	28.50-30.00	29.846	28.875	24.500
Lead	13.80	July 23	13.55	13.483	13.213	15.800
Zinc	11.00	Mar. 5	11.25	11.000	11.000	15.000
Tin	82.75	Aug. 20	83.00	81.577	92.918	121.500
Nickel	60.00	Jan. 14	56.50	60.000	60.000	56.500
Aluminum	21.50	July 24	20.50	20.923	20.500	19.000
Magnesium	27.00	Mar. 9	24.50	27.000	27.000	24.500

Quotations in cents per pound based on: Copper, deld. Conn. Valley; Lead, common grade, deld. St. Louis; Zinc, prime western, E. St. Louis; Tin, Straits, deld. New York; Nickel, electrolytic cathodes, 99.9%, base sizes at refinery unpacked; Aluminum, primary ingots, 99% plus, deld.; Magnesium, 99.8%, Freeport, Tex.

Bismuth: $2.25 per lb, ton lots.

Cadmium: Sticks and bars, $2.00 per lb deld.

Cobalt: 97-99%, $2.40 per lb for 550 lb keg; $2.42 per lb for 100 lb case; $2.47 per lb under 100 lb.

Columbium: Powder, $75.00 per lb, nom.

Copper: Electrolytic 29.00-30.00 deld. Conn. Valley, 29.125-30.125 del'd. Midwest; Lake 30.125 deld.; Fire refined 29.75 deld.

Germanium: 99.9%, $350.00 per lb nom.

Gold: U. S. Treasury, $35 per oz.

Indium: 99.9%, $2.25 per troy oz.

Iridium: $165-$175 per troy oz.

Lead: Common 13.80, chemical 13.90, corroding 13.90, St. Louis. New York basis, add 0.20.

Lithium: 98%, $10.00-13.00 per lb, depending on quantity.

Magnesium: 99.8% standard ingots 27.00, 10,000 lb or more, f.o.b. Freeport, Tex. Sticks, 1.3 in. dia., 45.00, 100 to 4999 lb.

Magnesium Alloys: AZ91B 30.50; AZ91C and alloys C, H, G and R 32.50; alloy M 34.50, 10,000 lb or more.

cury: Open market, spot, New York, -$191 per 76-lb flask.

ybdenum: Powder, 99%, hydrogen reduced 0 per lb; pressed ingot $4.06 per lb; ered ingot $5.53 per lb.

kel: Electrolytic cathodes, sheets (4 x 4 in. larger), unpacked, 60.00; 25-lb pigs 62.25; X" nickel shot 63.65; "F" nickel shot or ots, for addition to cast iron 60.00; prices b, Port Colborne, Ont., including import y. New York basis, add 0.92.

ium: $140.00-$150.00 per troy oz, nom.

ladium: $23-$24 per troy oz.

tinum: $91-$93 per troy oz. from refineries.

ium: $16.00-$21.50 per mg. radium content, ending on quantity.

odium: $125 per troy oz.

thenium: $80-85 per troy oz.

enium: 99.5%, $4.25-$4.75 per lb.

lium: 16.50, carlots; 17.00 l.c.l.

ntalum: Sheet, rod $42.45 per lb; powder .50 per lb.

dium: $1.75 per lb.

allium: $12.50 per lb.

: Straits, New York, 82.75.

ngsten Powder: 98.8%, carbon reduced, 1000 lots $5.35 per lb deld.; less than 1000 lb 50; 99% plus, hydrogen reduced $7.70. eated ingots $10.43 per lb.

c: Prime western 11.00, brass special 11.25, ermediate 11.50, E. St. Louis. Prime west- 11.25-11.50, brass special 11.50-11.75, in- mediate 11.75-12.00, high grade 12.35-12.85, ecial high grade 12.50-13.00, die casting oy ingot 15.50, deld.

conium: Sponge $14.00 per lb; powder 100 or more $7.00; less than 100 lb $8.00.

lote: Chromium, manganese and silicon met- are listed in ferroalloy section.)

SECONDARY METALS AND ALLOYS

uminum Ingot: Piston alloys 22.50-23.00; . 12 foundry alloy (No. 2 grade) 21.75- .50; 5% silicon alloy, 0.60 Cu max., 24.00- .75; 13 alloy, 0.60 Cu max., 24.00-24.75; 5 alloy 22.50-24.00; 108 alloy 22.50-23.00; eel deoxidizing grades, notch bars, granu- ted or shot: Grade 1, 23.75-24.00; grade 2, .50-23.00; grade 3, 21.50-22.00; grade 4, .50-21.00.

ass Ingot: Red brass, No. 115, 24.50; tin onze, No. 225, 35.25, No. 245, 29.50; high- ded tin bronze, No. 305, 28.75; No. 1 llow, No. 405, 20.75; manganese bronze No. 1, 25.25.

agnesium Alloy Ingot: AZ63A, 31.50; AZ91B, .50; AZ91C, 32.00; AZ92A, 31.50.

NONFERROUS MILL PRODUCTS

COPPER WIRE

are, soft, f.o.b. eastern mills, 100,000 lb lots, .36; 30,000 lb lots, 35.48; l.c.l. 35.98. Weath- proof. 100,000 lb, 36.28; 30,000 lb, 36.53; c.l., 37.03. Magnet wire deld., 15,000 lb or ore 41.83; l.c.l., 42.58.

TITANIUM

Prices per lb, 10,000 lb and over, f.o.b. mill) heets, $15; sheared mill plate, $12; strip, $15; ire, $10; forging billets, $6; hot-rolled and orged bars, $6.

LEAD

Prices to jobbers f.o.b. Buffalo, Cleveland, ittsburgh). Sheets, full rolls, 140 sq ft or ore $19 per cwt.; pipe, full coils $19 per wt; traps and bends, list prices plus 30%.

ZINC

heets 23.00, f.o.b. mill 36,000 lb and over. ibbon zinc in coils, 19.50-20.50, f.o.b. mill, 6,000 lb and over. Plates, not over 12-in., 0.75-21.75; over 12-in. 20.75-21.75.

NICKEL, MONEL, INCONEL

	"A" Nickel	Monel	Inconel
heet, C.R. ..	86.5	67.5	92.5
trip, C.R. ...	92.5	70.5	98.5
late, H.R. ..	84.5	66.5	90.5
od, Shapes ..	82.5	65.5	88.5
amless Tubes	115.5	100.5	137.5
hot, Blocks...	....	60.0	....

ALUMINUM

(30,000 lb base; freight allowed on 500 lb or more.)

Sheets and Circles: 2S and 3S mill finish c.l.

Thickness Range Inches	Widths or Diameters, In., Inc.	Flat Sheet Base*	Coiled Sheet Base	Coiled Sheet Circle† Base
0.249-0.136	12-48	33.9	...	...
0.135-0.096	12-48	34.4	...	...
0.095-0.077	12-48	35.1	32.7	37.5
0.076-0.061	12-48	35.7	32.9	37.7
0.060-0.048	12-48	36.1	33.2	38.1
0.047-0.038	12-48	36.6	33.6	38.4
0.037-0.030	12-48	37.0	34.0	39.1
0.029-0.024	12-48	37.6	34.3	39.6
0.023-0.019	12-36	38.3	35.1	40.4
0.018-0.017	12-36	39.1	35.7	41.3
0.016-0.015	12-36	40.0	36.5	42.5
0.014	12-24	41.0	37.5	43.8
0.013-0.012	12-24	42.1	38.2	44.8
0.011	12-24	43.1	39.4	46.4
0.010-0.0095	12-24	44.3	40.5	48.0
0.009-0.0085	12-24	45.6	41.9	50.0
0.008-0.0075	12-24	47.1	43.1	51.8
0.007	12-18	48.6	44.6	54.1
0.006	12-18	50.2	46.0	59.1

* Lengths 72 to 180 inches. † Maximum diameter, 26 inches.

ALUMINUM

Screw Machine Stock: 5000 lb and over.

Dia. (in.) or distance across flats	—Round— 11S-T3	17S-T4	—Hexagonal— 11S-T3	17S-T4
Drawn				
0.125	59.6	57.9	...	...
0.156-0.172	50.6	48.9	...	...
0.188	50.6	48.9	...	62.4
0.219-0.234	47.9	46.2	...	...
0.250-0.281	47.9	46.2	...	59.5
0.313	47.0	46.2	...	56.8
Cold-finished				
0.375-0.531	46.6	44.9	56.2	53.4
0.563-0.688	46.6	44.9	53.4	50.2
0.750-1.000	45.5	43.8	48.9	47.3
1.063	45.5	43.8	...	45.7
1.125-1.500	43.8	42.1	47.3	45.7
Rolled				
1.563	42.7	41.0	...	...
1.625-2.000	42.1	40.4	...	44.1
2.125-2.500	41.1	39.4	...	...
2.750-3.375	39.9	38.2	...	...

ALUMINUM

Plates and Circles: Thickness 0.250-3.000 in., widths or diameters 24-60 in., lengths 72-240 in.

Alloy	Plate Base	Circle Base
2S-F, 3S-F	32.4	36.3
50S-F	33.5	37.4
4S-F	34.5	39.1
52S-F	36.2	40.9
61S-T6	37.4	41.5
24S-T4*	39.3	45.4
75S-T6*	47.1	53.7

* Widths or diameters 24-48 in., lengths 72-180 in.

ALUMINUM

Industrial Roofing Sheet (0.032-in. thick): Flat, 42.75 in. wide, lengths 60-144 in., $2.838 to $6.816 per sheet. Corrugated, 35 in. wide, lengths 60-144 in., $2.862 to $6.874 per sheet.

Forging Stock: Round, Class 1, 42.05-32.76, in specific lengths 36-144 in., diameters 0.375-8.000 in.; rectangles and squares, Class 1, 49.2 to 37.6 in random lengths 0.375-4.000 in. thick, widths 0.750-10.00 in.

MAGNESIUM

Sheet: AZ31, commercial grade, 0.032-in. 108.00, 0.064-in. 81.00, 0.125-in. 71.00, 30,000 lb and over, f.o.b. mill.

Plate: Hot-rolled, AZ31, 53.00, 20,000 lb or more 0.188-1.000 in. thick, widths to 48 in., lengths to 144 in.; raised pattern floor plate, 69.00, 20,000 lb or more, ¼-in. thick, widths 24-48 in., lengths 60-144 in.

Extrusion Stock: AZ31, Rectangles, ¼ x 2 in. 69.20, 1 x 4 in. 63.00. Rod, 1 in. 66.00, 2 in. 62.50. Tubing, 1 in. OD x 0.065-in. 87.00. Angles, 1 x 1 x ⅛-in. 72.90, 2 x 2 x ¼-in. 67.00. Channels, 5 in. 67.80. I-Beams, 5 in. 66.20.

NONFERROUS SCRAP

DEALERS' BUYING PRICES

(Cents per pound, New York, in ton lots)

Copper and Brass: Heavy copper and wire, No. 1 21.00; No. 2 copper 18.50-19.00; light copper 16.50; No. 1 composition red brass 15.00; No. 1 composition turnings 14.50; mixed brass turnings 9.00; new brass clippings 18.50 nom.; No. 1 brass rod turnings 13.00 nom.; light brass 9.00; heavy yellow brass 11.00; new brass rod ends 17.50 nom.; auto radiators, unsweated 11.00; cocks and faucets 13.00; brass pipe 14.50.

Lead: Heavy 11.00-11.50; battery plate 6.25-6.50; linotype and stereotype 13.25; electrotype 11.50; mixed babbitt 12.00-12.50.

Zinc: Old zinc, 4.50; new die cast scrap, 4.50; old die cast scrap, 3.50.

Tin: No. 1 pewter 40.00-45.00; block tin pipe 65.00-67.00; No. 1 babbitt 37.00-40.00.

Aluminum: 2S clippings 13.00; low copper clippings 10.00, mixed clippings 10.00; old sheet 9.00; borings and turnings 6.50; pistons and struts 6.50; crankcases 9.00; industrial castings 9.00.

Magnesium: Clippings 20.00-21.00; clean castings 19.00-20.00; iron castings, not over 10% removable Fe, 18.00-19.00.

Nickel: Sheets and clips 80.00; rolled anodes 80.00; turnings 70.00; rod ends 80.00.

Monel: Clippings 28.00-30.00; old sheet 26.00-27.00; turnings 21.00-22.00; rods 28.00-30.00.

REFINERS' BUYING PRICES

(Cents per pound, carlots, delivered refinery)

Copper, Brass: No. 1 copper 21.50; No. 2 copper 20.00; light copper 18.50; refinery brass (60% copper) per dry copper content 18.00; auto radiators nom.

Beryllium Copper: Heavy scrap, 0.020-in. and heavier, not less than 1.5% Be, 42.00; light scrap 37.00.

Aluminum: 2S, 3S clippings 15.00-15.50; 51S, 52S clippings 15.00-15.50; 14S, 17S, 24S clippings 14.00-14.50; mixed clippings 14.00-14.50; old sheet 12.50-13.50; old cast 12.50-13.50; clean old cable, free of steel 14.50-16.00; borings and turnings 13.00-13.75.

INGOT MAKERS' BUYING PRICES

(Cents per pound, carlots, delivered)

Copper, Brass: No. 1 copper 23.00-23.50; No. 2 copper 20.50-21.00; light copper 19.00-19.50; No. 1 composition borings 16.25; No. 2 composition solids 17.00; heavy yellow brass solids 13.00; yellow brass turnings 12.25; radiators 12.75.

PLATING MATERIALS

(F.o.b. shipping points, freight allowed on quantities)

ANODES

Cadmium: Special or patented shapes $2.15 per lb.

Copper: Flat-rolled 47.14, oval 46.64, base prices; electrodeposited 38.38, carload lots; cast 44.14, ton lots.

Nickel: Depolarized, less than 500 lb 92.00; 500-4999 lb 88.00; over 5000 lb 86.00.

Tin: Bar or slab, less than 200 lb $1.015; 200-499 lb $1; 500-999 lb 99.50; 1000 lb or more 99.

Zinc: Bar 20.00, bar or flat top 19.00, ton lots.

CHEMICALS

Cadmium Oxide: $2.15 per lb, in 100 lb drums.

Chromic Acid: Less than 2000 lb 29.00; over 2000 lb 28.75.

Copper Cyanide: Under 1000 lb 63.90, 1000 lb and over 61.90.

Copper Sulfate: 100-6000 lb 11.35; 6000-12,000 lb 11.10; 12,000-24,000 lb 10.85; 24,000-36,000 lb 10.60; 36,000 lb and over 10.35.

Nickel Chloride: 100 lb 45.00; 200 lb 43.00; 300 lb 42.00; 400-4900 lb 40.00; 5000-9900 lb 38.00; 10,000 lb and over 37.00.

Nickel Sulfate: 100 lb 37.00; 200 lb 35.00; 300 lb 34.00; 400-4900 lb 32.00; 5000-35,900 lb 30.00; 36,000 lb and over 29.00.

Silver Cyanide: Cents per ounce, 16 oz 80.625; 100 oz 78.500; 2500 oz and over 77.375.

Sodium Cyanide: Egg, under 1000 lb 19.80, 1000-19,900 lb 18.80, 20,000 lb and over 17.80; granular, add 1.0 premium to above.

Sodium Stannate: Less than 100 lb 66.20; 100-600 lb 52.40; 700-1900 lb 49.80; 2000-9900 lb 48.10; 10,000 lb or more 47.

Stannous Chloride (Anhydrous): Less than 50 lb $1.509, 50 lb $1.169; 100-300 lb $1.019; 400-900 lb 99.40; 1000-1900 lb 97; 2000-4900 lb 93.30; 5000-19,000 lb 87.20; 20,000 lb and over 81.10.

Stannous Sulfate: Less than 50 lb $1.211; 50 lb 91.10; 100-1900 lb 89.10; 2000 lb and over 87.10.

Zinc Cyanide: Under 1000 lb 54.30, 1000 lb and over 52.30.

BRASS MILL PRICES

(Effective Apr. 1, 1953)

	MILL PRODUCTS a				SCRAP ALLOWANCES f		
	Sheet, Strip, Plate	Rod	Wire	Seamless Tube	Clean Heavy	Rod Ends	Clean Turnings
Copper	50.48b	48.08c	....	50.42	28.625	28.625	27.875
Yellow Brass	42.87	36.68d	43.16	45.78	21.375	21.125	19.625
Red Brass, 85%	47.11	46.80	47.40	49.92	25.125	24.875	24.375
Low Brass, 80%	45.99	45.68	46.28	48.80	24.125	23.875	23.375
Naval Brass	47.01	41.07	53.52	50.17	20.000	19.750	19.250
Commercial Bronze, 90%...	48.76	48.45	49.05	51.32	26.125	25.875	25.375
Nickel Silver, 10%	56.56	58.59	58.59	....	25.250	25.000	12.625
Phosphor Bronze, A, 5%....	70.50	70.75	70.75	72.25	30.625	30.375	29.375
Silicon Bronze	54.70	53.64	54.49	72.10e	27.625	27.375	26.625
Manganese Bronze	50.73	44.62	54.74	....	20.000	19.750	19.250
Muntz Metal	44.91	40.47	....	....	20.000	19.750	19.250

a. Cents per lb, f.o.b. mill. b. Hot-rolled. c. Cold-drawn. d. Free cutting. e. 3% silicon. f. Prices in cents per lb for less than 20,000 pounds, f.o.b. shipping point. On lots over 20,000 lb at one time, of any or all kinds of scrap, add 1 cent per lb.

Nonferrous Metals

Now that nonferrous metals are easier to get, purchasers are buying only for their near-term needs. Buying lag is pronounced in the "commodity metals"

HIGH TIDE in production is predicted for fall, but purchasing departments must not be tuned in.

They still have plenty of orders to place. Getting used to the pre-Korea availability of most metals, they're doing little about finding supplies beyond near-term needs. The lag is especially pronounced in the "commodity metals," as some market men term those subject to frequent price fluctuations.

Up Goes Copper—Copper shows remarkable strength despite heavy stocks overhanging the market. Last week the custom smelters quoting a 28.50-cent price reconsidered and boosted it a half-cent, narrowing the market range to 29.00-30.00 cents.

London copper price on a U. S.-delivered equivalent is now above domestic levels. One explanation is that the U. K. government itself is supporting the market. When free trading started, the government let consumers have stocks on a quasi-consignment basis; the metal was shipped to fabricators with a price adjustment clause in case of sudden market shifts. Thus consumers were in no rush to buy and volume remains light.

U. S. Sales Light—Buying in the U. S. is confined to August and September. August sales will about equal July's when deliveries to fabricators skidded 35,000 tons to 104,593 tons.

Refined stocks going into August rose nearly 20,000 tons to 77,100 tons, mainly due to industry vacations. Copper Institute figures show refined production by members in and out of the U. S. dropped over 30,000 tons to 196,719 tons while stocks increased 50,507 tons in the month. Reports from Chile indicate unsold accumulations of 84,000 tons of copper.

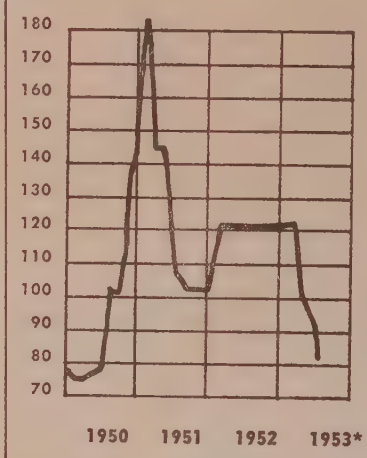
Ninety-Cent Tin?—Outlook in tin, say the experts, is for eventual decline——at year end or early next year—to about 60 cents. They also believe tin will climb to 90 cents before it takes the tumble. That's apparently what's happening now. Spot tin has risen to 83 cents and forward price is not far behind.

Three factors account for the firming: Dealers finding themselves short are scrambling to replenish their stocks, stronger buying by European consumers and slower deliveries of metal from mines. In Washington, indications are that the U. S. will go along with an international meeting to study remedies for violent tin fluctuations.

TIN PRICES: Feast or Famine Over the Years . . . . . Heavy Surplus Causes Precipitous Drop in '53

MONTHLY AVERAGE

Straits tin, New York, cents per lb.



Source: American Bureau of Metal Statistics

* 1953 figures, STEEL's Monthly Averages

Price Absorption—Zinc markets suffer from heavy competition and a multitude of price systems. Producers adhering to the E. St. Louis base are meeting lower quotations offered by a competitor on delivered price basis by absorbing the difference. Over all it amounts to a fractional price cut on prime western. Zinc markets will feel the effects of the General Motors transmission plant fire as diecasting orders are trimmed.

Lead orders in the U. S. are still slow coming in, but consumers on the continent keep the market strong. Any slackening at home or abroad could bring a price cut in a hurry though.

Aluminum buying continues steady, but more comfortable supply is indicated in more and more mill products. Delivery dates generally are narrowing.

Nickel Easing Is Near

One of the last holdouts on the path to plenty in metals supply is weakening. Nickel is showing signs of a dramatic easing coming soon, though no great spurt in supplies is anticipated. International Materials Conference, which has allocated free world supplies in a voluntary program since the last quarter of 1951, will discontinue this operation at the end of the third quarter.

Further allocations will be unnecessary so far as can be seen at present, says IMC. Supplies are now 10 per cent higher than when rationing began, and foreign demand has fallen off, contributing to balance sooner than expected. Relaxation of domestic nickel use restrictions is expected Oct. 1.

Titanium Prices To Change

Titanium mill product prices will be revised this fall but no drastic changes are expected. Some classes will be increased slightly and some dropped; average price will be about the same. Titanium products (see page 117) haven't changed price in three years and the changes will stem from revaluation of schedules to bring prices in line with cost of production. Sales of titanium products remain good, producers report.

Harvey Looks to Alaska

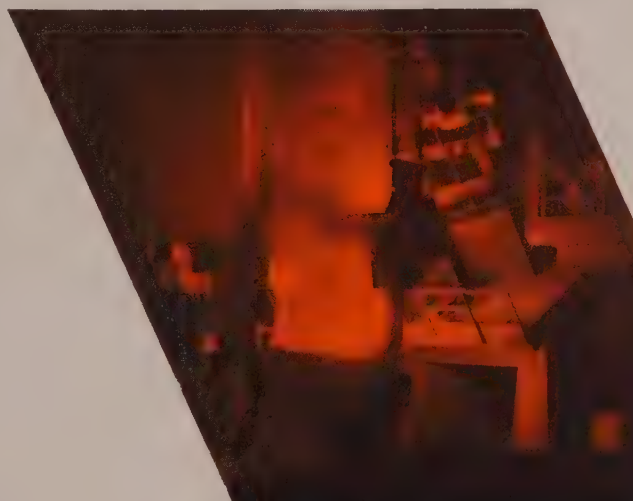
Harvey Aluminum applied to the Federal Power Commission for a temporary permit to investigate possibility of a hydroelectric power project on the Copper river in Alaska. Ultimate installed capacity would be 1,475,000 horsepower, and an aluminum smelter is the likely application. Alcan's mammoth Kitimat, B. C., plant has greatest possible firm potential of 1,650,000 horsepower, sufficient to turn out 500,000 tons of aluminum yearly.

Magnesium in Easy Supply

Magnesium products market is free and easy. Stock delivery of magnesium and magnesium alloy ingot is possible today. Most fabricated products can be had on spot order too. An exception is extruded shapes, where deliveries are extended as much as 25 to 30 weeks.

Newport Steel POURS QUALITY

from ELECTRIC and OPEN HEARTH FURNACES



Customer recognition of Newport's growing importance in the industry is the result of high quality and conscientious service throughout two-thirds of a century. Included in the present expansion and modernization program costing millions of dollars, is a battery of highly efficient and economical electric furnaces. In both open hearth and electric furnaces Newport matches your most exacting specifications with reverent vigilance. New and expanded facilities, the real advantages of economical Waterail delivery, and location in the nation's most rapidly expanding industrial area, all make Newport your logical source of top quality steel.

ECONOMICAL WATERAIL DELIVERY

Newport Steel is situated on the Mississippi-Ohio River system and the great Cincinnati rail hub. With the advantage of location, new river barge facilities and seven major railroads, Newport gives economical, dependable delivery to industrial areas throughout the Middle West and South.

PRODUCTS OF NEWPORT STEEL

Hot-Rolled Steel in Coil
Hot-Rolled Pickled Steel in Coil
Electric Weld Line Pipe
Hot-Rolled Sheets
Galvanized Sheets
Galvannealed Sheets
Colorbond Sheets
Hot-Rolled Pickled Sheets
Electrical Sheets
Alloy Sheets
Roofing and Siding
Eave Trough, Conductor Pipe
Culverts

Newport Steel CORPORATION

NEWPORT, KENTUCKY

STEEL PRICES

Mill prices as reported to STEEL, cents per pound except as otherwise noted. Changes shown in italics.
Code numbers following mill points indicate producing company, key on page 121. Key to footnotes, page 123.

—SEMIFINISHED—

INGOTS, Carbon, Forging (NT)
Fontana,Calif. K1 ....$86.00
Munhall,Pa. U5 .....59.00

INGOTS Alloy (NT)
Detroit R7 .....$63.00
Fontana,Calif. K1 ...88.00
Midland,Pa. C18 .....62.00
Munhall,Pa. U5 .....62.00

BILLETS, BLOOMS & SLABS Carbon Rerolling (NT)
Aliquippa,Pa. J5 ....$62.50
Bessemer,Pa. U5 .....62.00
Clairton,Pa. U5 .....62.00
Ensley,Ala. T2 .....62.00
Fairfield,Ala. T2 .....62.00
Fontana,Calif. K1 ....81.00
Gary,Ind. U5 .....62.00
Johnstown,Pa. B2 ....62.00
Lackawanna,N.Y. B2 ..62.00
Munhall,Pa. U5 .....62.00
So.Chicago,Ill. U5 ....62.00
So.Duquesne,Pa. U5 ..62.00

Carbon, Forging (NT)
Aliquippa,Pa. J5 ....$75.50
Bessemer,Pa. U5 ....75.50
Buffalo R2 .....75.50
Canton,O. R2 .....75.50
Clairton,Pa. U5 .....75.50
Cleveland R2 .....75.50
Conshohocken,Pa. A3 ..82.50
Detroit R7 .....78.50
Ensley,Ala. T2 .....75.50
Fairfield,Ala. T2 .....75.50
Fontana,Calif. K1 ....94.50
Gary,Ind. U5 .....75.50
Geneva,Utah C11 ....75.50
Houston S5 .....85.50
Johnstown,Pa. B2 ....75.50
Lackawanna,N.Y. B2 ..75.50
LosAngeles B3 .....94.50
Munhall,Pa. U5 .....75.50
Seattle B3 .....94.50
So.Chicago R2,U5,W14..75.50
So.Duquesne,Pa. U5 ..75.50
So.SanFrancisco B3 ...94.50

Alloy, Forging (NT)
Bethlehem,Pa. B2 ....$82.00
Buffalo R2 .....82.00
Canton,O. R2 .....82.00
Canton,O. T7 .....84.60
Conshohocken,Pa. A3 ..89.00
Detroit R7 .....85.00
Fontana,Calif. K1 ....101.00
Gary,Ind. U5 .....82.00
Houston S5 .....92.00
Ind.Harbor,Ind. Y1 ..82.00
Johnstown,Pa. B2 ....82.00
Lackawanna,N.Y. B2 ..82.00
LosAngeles B3 .....102.00
Massillon,O. R2 .....82.00
Midland,Pa. C18 .....82.00
Munhall,Pa. U5 .....82.00
So.Chicago R2,U5,W14..82.00
So.Duquesne,Pa. U5 ...82.00
Struthers,O. Y1 .....82.00
Warren,O. C17 .....82.00

ROUNDS, SEAMLESS TUBE (NT)
Buffalo R2 .....$92.50
Canton,O. R2 .....92.50
Cleveland R2 .....92.50
Fontana,Calif. K1 ..113.50
Gary,Ind. U5 .....92.50
Massillon,O. R2 .....92.50
So.Chicago,Ill. R2 ....92.50
So.Duquesne,Pa. U5 ..92.50

SHEET BAR (NT)
Fontana,Calif. K1 ....$93.18

SKELP
Aliquippa,Pa. J5 .....3.85
Munhall,Pa. U5 .....3.75
Warren,O. R2 .....3.75
Youngstown R2, U5 ...3.75

WIRE RODS
Aliquippa,Pa. J5 ....4.525
Alton,Ill. L1 .....4.70
AlabamaCity,Ala. R2...4.525
Buffalo W12 .....4.525
Cleveland A7 .....4.525
Donora,Pa. A7 .....4.525
Fairfield,Ala. T2 ....4.525
Fontana,Calif. K1 ....5.325
Johnstown,Pa. B2 ....4.525
Houston S5 .....4.925
Minnequa,Colo. C10 ..4.775
Monessen,Pa. P7 .....4.725
Joliet,Ill. A7 .....4.525
KansasCity,Mo. S5 ....4.865
LosAngeles B3 .....5.325
No.Tonawanda,N.Y.B11 4.525
Pittsburg,Calif. C11 ..5.175
Portsmouth,O. P12 ....4.725
Roebling,N.J. R5 ....4.625
So.Chicago,Ill. R2 ....4.525
SparrowsPoint,Md. B2.4.625
Sterling,Ill.(1) N15 ..4.525
Struthers,O. Y1 .....4.525
Torrance,Calif. C11 ...5.325
Worcester,Mass. A7 ...4.825

—STRUCTURALS—

Carbon Steel Stand. Shapes
AlabamaCity,Ala. R2 ..4.10
Aliquippa,Pa. J5 .....4.10
Bethlehem,Pa. B2 ....4.15
Bessemer,Ala. T2 .....4.10
Clairton,Pa. U5 .....4.10
Fairfield,Ala. T2 .....4.10
Fontana,Calif. K1 ....4.75
Gary,Ind. U5 .....4.10
Geneva,Utah C11 .....4.10
Houston S5 .....4.60
Ind.Harbor,Ind. I-2 ...4.10
Johnstown,Pa. B2 ....4.15
KansasCity,Mo. S5 ....4.80
Lackawanna,N.Y. B2 ..4.15
LosAngeles B3 .....4.80
Minnequa,Colo. C10 ....4.55
Munhall,Pa. U5 .....4.10
Niles,Calif.(22) P1 ....4.91
Phoenixville,Pa. P4 ....4.95
Seattle B3 .....4.85
So.Chicago,Ill. U5, W14.4.10
So.SanFrancisco B3 ...4.75
Torrance,Calif. C11 ....4.80
Weirton,W.Va. W6 ....4.35

Wide Flange
Bethlehem,Pa. B2 .....4.15
Clairton,Pa. U5 .....4.10
Fontana,Calif. K1 .....5.30
Lackawanna,N.Y. B2 ..4.15
Munhall,Pa. U5 .....4.10
So.Chicago,Ill. U5 ....4.10

Alloy Stand. Shapes
Clairton,Pa. U5 .....5.00
Fontana,Calif. K1 ....6.40
Gary,Ind. U5 .....5.00
Munhall,Pa. U5 .....5.00
So.Chicago,Ill. U5 .....5.00

H.S., L.A. Stand. Shapes
Aliquippa,Pa. J5 .....6.175
Bessemer,Ala. T2 .....6.175
Bethlehem,Pa. B2 .....6.20
Clairton,Pa. U5 .....6.175
Fairfield,Ala. T2 .....6.175
Fontana,Calif K1 ....6.825
Gary,Ind. U5 .....6.175
Geneva,Utah C11 .....6.175
Ind.Harbor,Ind. I-2 ..6.175
Ind.Harbor,Ind. Y1 ..6.675
Johnstown,Pa. B2 .....6.20
Lackawanna,N.Y. B2 ...6.20
LosAngeles B3 .....6.85
Munhall,Pa. U5 .....6.175
Seattle B3 .....6.90
So.Chicago,Ill. U5, W14 6.175
So.SanFrancisco B3 ....6.80
Struthers,O. Y1 .....6.675

H.S., L.A. Wide Flange
Bethlehem,Pa. B2 .....6.20
Lackawanna,N.Y. B2 ...6.20
Munhall,Pa. U5 .....6.125
So.Chicago,Ill. U5 ....6.125

BEARING PILES
Munhall,Pa. U5 .....4.10
So.Chicago,Ill. U5 .....4.10

—PILING—

STEEL SHEET PILING
Ind.Harbor,Ind. I-2 ...4.925
Lackawanna,N.Y. B2 ..4.925
Munhall,Pa. U5 .....4.925
So.Chicago,Ill. U5 ....4.925

—PLATES—

PLATES, Carbon Steel
AlabamaCity,Ala. R2 ..4.10
Aliquippa,Pa. J5 .....4.10
Ashland,Ky. (15) A10 ..4.10
Bessemer,Ala. T2 .....4.10
Clairton,Pa. U5 .....4.10
Claymont,Del. C22 ....4.55
Cleveland J5, R2 .....4.10
Coatesville,Pa. L7 ....4.35
Conshohocken,Pa. A3 ..4.55
Ecorse,Mich. G5 .....4.65
Fairfield,Ala. T2 .....4.10
Fontana,Calif.(30) K1 ..4.75
Gary,Ind. U5 .....4.10
GraniteCity,Ill. G4 ....4.60
Geneva,Utah C11 .....4.10
Harrisburg,Pa. C5 ....6.50
Houston S5 .....4.60
Ind.Harbor,Ind. I-2, Y1.4.10
Johnstown,Pa. B2 .....4.10
Lackawanna,N.Y. B2 ..4.10
Minnequa,Colo. C10 ....4.95
Munhall,Pa. U5 .....4.10
Pittsburgh J5 .....4.10
SporrowsPoint,Md. B2 ..4.10
Steubenville,O. W10 ...4.10
Warren,O. R2 .....4.10
Weirton,W.Va. W6 ....4.40
Youngstown R2, U5, Y1.4.10

PLATES, Carbon A.R.
Fontana,Calif. K1 .....5.90
Geneva,Utah C11 .....5.25

PLATES, Wrought Iron
Economy,Pa. B14 .....9.30

PLATES,High-Strength Low-Alloy
Aliquippa,Pa. J5 .....6.25
Bessemer,Ala. T2 .....6.25
Clairton,Pa. U5 .....6.25
Cleveland J5 .....6.25
Conshohocken,Pa. A3 ..6.50
Ecorse,Mich. G5 .....7.10
Fairfield,Ala. T2 .....6.25
Fontana,Calif.(30) K1 .6.95
Gary,Ind. U5 .....6.25
Geneva,Utah C11 .....6.25
Ind.Harbor,Ind. I-2 ...6.25
Ind.Harbor,Ind. Y1 ....6.75
Johnstown,Pa. B2 .....6.25
Lackawanna,N.Y. B2 ..6.25
Munhall,Pa. U5 .....6.25
Pittsburgh J5 .....6.25
Seattle B3 .....7.15
Sharon,Pa. S3 .....6.25
So.Chicago,Ill. U5, W14.6.25
SparrowsPoint,Md. B2 ..6.25
Youngstown U5 .....6.25
Youngstown Y1 .....6.75

PLATES, Alloy
Claymont,Del. C22 ....5.65
Coatesville,Pa. L7 ....5.75
Fontana,Calif. K1 ....6.60
Gary,Ind. U5 .....5.55
Johnstown,Pa. B2 .....5.55
Munhall,Pa. U5 .....5.55
Sharon,Pa. S3 .....5.70
So.Chicago,Ill. U5, W14 5.55
SparrowsPoint,Md. B2 5.55

FLOOR PLATES
Cleveland J5 .....5.15
Conshohoken,Pa. A3 ..5.15
Ind.Harbor,Ind. I-2 ....5.15
Munhall,Pa. U5 .....5.15
So.Chicago,Ill. U5 .....5.15

PLATES, Ingot Iron
Ashland,c.l (15) A10 ..4.35
Ashland,l.c.l, (15) A10..4.85
Cleveland, c.l. R2 .....4.70
Warren,O. c.l. R2 ....4.70

—BARS—

BARS, Hot-Rolled Carbon
AlabamaCity,Ala. R2 ..4.15
Aliquippa,Pa. J5 .....4.15
Alton,Ill. L1 .....4.50
Atlanta,Ga. A11 .....4.40
Bessemer,Ala. T2 .....4.15
Buffalo R2 .....4.15
Clairton,Pa. U5 .....4.15
Canton,O. R2 .....4.15
Cleveland R2 .....4.15
Detroit R7 .....4.30
Ecorse,Mich. G5 .....4.50
Emeryville,Calif. J7 ...4.90
Fairfield,Ala. T2 .....4.15
Fontana,Calif. K1 ....4.85
Gary,Ind. U5 .....4.15
Houston S5 .....4.65
Ind.Harbor,Ind. I-2, Y1.4.15
Johnstown,Pa. B2 .....4.15
KansasCity,Mo. S5 ....4.85
Lackawanna,N.Y. B2 ..4.15
LosAngeles B3 .....4.85
Milton,Pa. B6 .....4.55
Minnequa,Colo. C10 ....4.60
Niles,Calif. P1 .....4.85
N.Tonawanda,N.Y.B11 .4.15
Pittsburg,Calif. C11 ....4.85
Pittsburgh J5 .....4.15
Portland,Oreg. O4 .....4.90
Seattle B3, N14 .....4.90
So.Chicago R2, U5, W14 4.15
So.Duquesne,Pa. U5 ....4.15
So.SanFran.,Calif. B3...4.90
Sterling,Ill.(1) N15 ...4.15
Struthers,O. Y1 .....4.15
Torrance,Calif. C11 ....4.85
Weirton,W.Va. W6 ....4.30
Youngstown R2, U5 ....4.15

BARS, Hot-Rolled Alloy
Bethlehem,Pa. B2 ....4.875
Buffalo R2 .....4.875
Canton,O. T7 .....5.02
Canton,O. R2 .....4.875
Clairton,Pa. U5 .....4.875
Detroit R7 .....5.025
Ecorse,Mich. G5 .....5.225
Fontana,Calif. K1 ....5.925
Gary,Ind. U5 .....4.875
Houston S5 .....5.375
Ind.Harbor,Ind. I-2, Y1 4.875
Johnstown,Pa. B2 ....4.875
KansasCity,Mo. S5 ....5.575
Lackawanna,N.Y. B2..4.875
LosAngeles B3 .....5.925
Massillon,O. R2 .....4.875
Midland,Pa. C18 .....4.875
So.Chicago R2, U5,W14 4.875
So.Duquesne,Pa. U5 ..4.875
Struthers,O. Y1 .....4.875
Warren,O. C17 .....4.875
Youngstown U5 .....4.875

BARS & SMALL SHAPES, H.R. High-Strength Low-Alloy
Aliquippa,Pa. J5 ....6.225
Bessemer,Ala. T2 ....6.225
Bethlehem,Pa. B2 ....6.225
Clairton,Pa. U5 .....6.225
Ecorse,Mich. G5 .....6.875
Fairfield,Ala. T2 .....6.225
Fontana,Calif. K1 ....7.475
Gary,Ind. U5 .....6.225
Ind.Harb.,Ind. I-2 ....6.225
Ind.Harb.,Ind. Y1 ....6.725
Johnstown,Pa. B2 .....6.225
Lackawanna,N.Y. B2 ..6.225
LosAngeles B3 .....6.925
Pittsburgh J5 .....6.225
Seattle B3 .....6.975
So.Chicago W14 .....6.225
So.Duquesne,Pa. U5 ..6.225
So.SanFrancisco B3 ..6.975
Struthers,O. Y1 .....6.725
Youngstown U5 .....6.225

BAR SIZE ANGLES;H.R.CARBON
Bethlehem,Pa. B2 .....4.35

BAR SIZE ANGLES; S. Shapes
Aliquippa,Pa. J5 .....4.15
Atlanta A11 .....4.40
Niles,Calif. P1 .....4.85
SanFrancisco S7 .....5.10

BAR SHAPES, Hot-Rolled Alloy
Clairton,Pa. U5 .....5.00
Fontana,Calif. K1 ....6.00
Gary,Ind. U5 .....5.00
Houston S5 .....5.70
KansasCity S5 .....5.90
Youngstown U5 .....5.00

BARS, Cold-Finished Carbon
Ambridge,Pa. W18 ....5.20
BeaverFalls,Pa. M12, R2 5.20
Buffalo B5 .....5.25
Camden,N.J. P13 .....5.65
Carenegie,Pa. C12 .....5.20
Chicago W18 .....5.20
Cleveland A7, C20 ....5.20
Detroit P17, R7 .....5.35
Detroit B5 .....5.40
Donora,Pa. A7 .....5.20
Elyria,O. W8 .....5.20
FranklinPark,Ill. N5 ..5.20
Gary,Ind. R2 .....5.20
GreenBay,Wis. F7 ...5.185
Hammond,Ind. L2, M13 5.20
Hartford,Conn. R2 ....5.75
Harvey,Ill. B5 .....5.20
LosAngeles R2 .....6.65
Mansfield,Mass. B5 ....5.75
Massillon,O. R2, R8....5.20
Monaca,Pa. S17 .....5.20
Newark,N.J. W18 .....5.65
NewCastle,Pa. (17) B4. 5.20
Pittsburgh J5 .....5.20
Plymouth,Mich. P5 ....5.45
Putnam,Conn. W18 .....5.75
Readville,Mass. C14 ....5.75
St.Louis,Mo. M5 .....5.50
So.Chicago,Ill. W14 ....5.20
SpringCity,Pa. K3 ....5.65
Struthers,O. Y1 .....5.20
Waukegan,Ill. A7 .....5.20
Worcester,Mass. W19 ...6.10
Youngstown F3, Y1 .....5.20

BARS, Cold-Finished Carbon (Turned and Ground)
Cumberland,Md.(5) C19.4.45

BARS, Cold-Finished Alloy
Ambridge,Pa. W18 ....6.325
Beaver,Falls,Pa. M12 ..6.325
Bethlehem,Pa. B2 ....6.325
Buffalo B5 .....6.325
Camden,N.J. P13 .....6.50
Canton,O. R2 .....6.325
Canton,O. T7 .....6.29
Carnegie,Pa. C12 .....6.00
Chicago W18 .....6.325
Cleveland A7, C20 ....6.325
Detroit P17, R7 .....6.475
Detroit B5 .....6.525
Donora,Pa. A7 .....6.325
Elyria,O. W8 .....6.325
Gary,Ind. R2 .....6.325
Hammond,Ind. L2, M13 6.325
Hartford,Conn. R2 ....6.775
Harvey,Ill. B5 .....6.325
Lackawanna,N.Y. B2 ..6.325
Mansfield,Mass. B5 ...6.775
Massillon,O. R2, R8 ..6.325
Midland,Pa. C18 .....6.325
Monaca,Pa. S17 .....6.325
Newark,N.J. W18 .....6.65
Plymouth,Mich. P5 ....6.525
So.Chicago,Ill. R2, W14 6.325
SpringCity,Pa. K3 ....6.475
Struthers,O. Y1 .....6.325
Warren,O. C17 .....6.325
Waukegan,Ill. A7 .....6.325
Worcester,Mass. A7 ...6.625
Youngstown F3, Y1 ..6.325

BARS, Reinforcing (Fabricators)
AlabamaCity,Ala. R2 ..4.15
Atlanta A11 .....4.40
Buffalo R2 .....4.15
Cleveland R2 .....4.15
Emeryville,Calif. J7 ....4.90
Fairfield,Ala. T2 .....4.15
Fontana,Calif. K1 ....4.85
Gary,Ind. U5 .....4.15
Houston S5 .....4.65
Ind.Harbor,Ind. I-2, Y1.4.15
Johnstown,Pa. B2 .....4.15
KansasCity,Mo. S5 ....4.85
Lackawanna,N.Y. B2 ..4.15
LosAngeles B3 .....4.85
Milton,Pa. B6 .....4.55
Minnequa,Colo. C10 ....4.75
Niles,Calif. P1 .....4.85
Pittsburg,Calif. C11 ....4.85
Pittsburgh J5 .....4.15
SandSprings,Okla. S5 ..5.05
Seattle B3, N14 .....4.90
So.Chicago,Ill. R2 .....4.15
So.Duquesne,Pa. U5 ....4.15
So.SanFrancisco B3 ....4.90
SparrowsPoint,Md. B2 ..4.15
Sterling,Ill. (1) N15 ...4.15
Struthers,O. Y1 .....4.15
Torrance,Calif. C11 ....4.85
Youngstown R2, U5 ....4.15

BARS, Reinforcing (Fabricated; to consumers)
Johnstown, ¼-1" B2 ..5.55
KansasCity S5 .....6.35
LosAngeles B3 .....6.18
Marion,O. P11 .....5.25
Seattle N14 .....5:80
Seattle B3 .....6.25
So.SanFrancisco B3 ....6.25
SparrowsPt, ⅛-1" B2..5.55
Williamsport,Pa. S19 ..5.45

RAIL STEEL BARS
Avis,Pa.(4) J8 .....4.75
ChicagoHts.(3) C2 ....4.50
ChicagoHts.(4) C2 ....4.75
ChicagoHts.(3,4) I-2 ....4.50
Franklin,Pa.(3) F5 ....4.50
Franklin,Pa.(4) F5 ....4.75
FortWorth,Tex.(26) T4..4.65
Marion,O.(3) P11 .....4.50
Moline,Ill.(3) R2 .....4.05
Tonawanda(3,4) B12 ..5.00
Williamsport(3) S19 ...5.25
Williamsport,Pa.(4) S19.5.45

BARS, Wrought Iron
Economy,Pa.(S.R.) B14 10.40
Economy,Pa.(D.R.)B14 12.90
Economy(Staybolt) B14 13.20
Mck.Rks.(Staybolt) L5 15.50
Mck.Rks.(S.R.) L5 ...10.40
Mck.Rks.(D.R.) L5 ...14.00

—SHEETS—

SHEETS, Hot-Rolled Steel (18 gage and heavier)
AlabamaCity,Ala. R2 .3.925
Ashland,Ky.(8) A10 ..3.925
Butler,Pa. A10 .....3.925
Cleveland J5, R2 ....3.925
Conshohocken,Pa. A3 ..4.325
Detroit M1 .....4.40
Ecorse,Mich. G5 .....4.125
Fairfield,Ala. T2 .....3.925
Fairless,Pa. U5 .....4.025
Fontana,Calif. K1 .....4.70
Gary,Ind. U5 .....3.925
Geneva,Utah C11 .....4.025
GraniteCity,Ill. G4 ....4.30
Ind.Harbor,Ind. I-2, Y1 3.925
Irvin,Pa. U5 .....3.925
Lackawanna,N.Y. B2..3.925
Munhall,Pa. U5 .....3.925

es,O. N12 .....5.425
tsburg,Calif. C11 ..4.625
sburgh J5 .....3.925
verdale,Ill. A1 .....3.925
aron, Pa. S3 .....4.225
Chicago,Ill. W14 ...3.925
arrowsPoint,Md. B2..3.925
eubenville,O. W10 ..3.925
rrance, Calif. C11 ..4.625
arren,O. R2 .....3.925
eirton,W.Va. W6 ...3.925
oungstown U5, Y1 ...3.925

HEETS, H.R. (19 gage)

labamaCity,Ala. R2 ..5.225
over,O. R1 .....5.975
ansfield,O. E6 .....5.80
lles,O. N12 .....5.20
orrance,Calif. C11 ...5.875

HEETS, H.R. (14 ga. heavier)
High-Strength Low-Alloy

leveland J5, R2 .....5.90
onshohocken,Pa. A3 ..6.15
corse,Mich. G5 .....6.375
airfield,Ala. T2 .....5.90
ontana,Calif K1 .....7.00
ary,Ind. U5 .....5.90
nd.Harbor,Ind. I-2 ...5.90
nd.Harbor,Ind. Y1 ...6.40
rvin,Pa. U5 .....5.90
ackawanna(35) B2 ...5.90
unhall,Pa. U5 .....5.90
ittsburgh J5 .....5.90
haron,Pa. S3 .....5.90
o.Chicago,Ill. U5 ...5.90
parrowsPoint(38) B2 .5.90
arren,O. R2 .....5.90
eirton,W.Va. W6 ....6.175
oungstown U5 .....5.90
oungstown Y1 .....6.40

HEETS, Hot-Rolled Ingot Iron
18 Gage and Heavier

shland,Ky.(8) A10 ..4.175
leveland R2 .....4.525
nd.Harbor,Ind. I-2 ..4-175
Warren,O. R2 .....4.525

SHEETS, Cold-Rolled Steel
(Commercial Quality)

Butler,Pa. A10 .....4.775
Cleveland J5, R2 .....4.775
Ecorse,Mich. G5 .....4.975
Fairfield,Ala. T2 .....4.775
Fairless,Pa. U5 .....4.875
Follansbee,W.Va. F4 ..5.775
Fontana,Calif. K1 ....5.875
Gary,Ind. U5 .....4.775
GraniteCity,Ill. G4 ...5.275
Ind.Harbor,Ind. I-2, Y1 4.775
Irvin,Pa. U5 .....4.775
Lackawanna,N.Y. B2 ..4.775
Middletown,O. A10 ....4.775
Pittsburg,Calif. C11 ..5.725
Pittsburgh J5 .....4.775
SparrowsPoint,Md. B2..4.775
Steubenville,O. W10 ...4.775
Warren,O. R2 .....4.775
Weirton,W.Va. W6 ...4.775
Youngstown Y1 .....4.775

SHEETS, Cold-Rolled
High-Strength Low-Alloy

Cleveland J5, R2 .....7.225
Ecorse,Mich. G5 .....7.675
Fontana,Calif. K1 .....8.275
Gary,Ind. U5 .....7.225
IndianaHarbor,Ind. Y1 .7.725
Irvin,Pa. U5 .....7.225
Lackawanna(37) B2 ...7.225
Pittsburgh J5 .....7.225
SparrowsPoint (38) B2.7.225
Warren,O. R2 .....7.225
Weirton,W.Va. W6 ...7.475
Youngstown Y1 .....7.725

SHEETS, Cold-Rolled Ingot Iron

Butler,Pa. A10 .....5.275
Cleveland R2 .....5.375
Middletown,O. A10 ....5.275
Warren,O. R2 .....5.375

SHEETS, Gal'd No. 10 Steel

AlabamaCity,Ala. R2 .5.275
Ashland,Ky (8) A10 ..5.275
Canton,O. R2 .....5.275
Dover,O. R1 .....5.675
Fairfield,Ala. T2 ....5.275†
Gary,Ind. U5 .....5.275†
GraniteCity,Ill. G4 ....5.475
Ind.Harbor,Ind. I-2 ..5.325
Irvin,Pa. U5 .....5.275†
Kokomo,Ind. C16 .....5.375
MartinsFerry,O. W10 ..5.275
Niles,O. N12 .....5.80
Pittsburg,Calif. C11 ..6.025
Sharon,Pa. S3 .....5.45
SparrowsPoint,Md. B2 5.275
Steubenville,O. W10 ..5.275
Torrance,Calif. C11 ..6.025
Weirton,W.Va. W6 ....5.275

†Based on 5c zinc.

SHEETS, Galvanized No. 10,
High-Strength Low-Alloy

Irvin,Pa. U5 .....7.925
SparrowsPoint(39) B2 .8.075

SHEETS, Galvanized Ingot Iron
No. 10 flat

Ashland,Ky.(8) A10 ..5.525
Canton,O. R2 .....6.025

SHEETS, Culvert	Cu Alloy	Cu Fe
Ashland,Ky. A10	6.325	....
Canton,O. R2	...6.475	6.925
Fairfield T2	....6.075	6.325
Gary,Ind. U5	..6.075	6.325
Ind Harbor I-2	.6.075	6.325
Irvin,Pa. U5	...6.075	6.325
Kokomo,Ind. C16	6.525	....
MartinsFry.,O.W106.075		....
Pitts.Cal. C11	..6.825	....
SparrowsPt. B2	.6.075	....
Torrance,Calif.C11	6.825	....

SHEETS, Culvert	Pure Iron
Ashland,Ky. A10	.....6.575
Fairfield,Ala. T2	.....6.325
MartinsFerry,O. W10	..6.325

SHEETS, Galvannealed Steel

Canton,O. R2 .....5.825
Irvin,Pa. U5 .....5.825†
Kokomo,Ind.(13) C16 ..5.925
Niles,O. N12 .....6.35

†Based on 5c zinc.

SHEETS ZINCGRIP STEEL

Butler,Pa. A10 .....5.525
Middletown,O. A10 ....5.525

SHEETS, ZINCGRIP Ingot Iron

Butler,Pa. A10 .....5.775
Middletown,O. A10 ....5.775

SHEETS, Electro Galvanized

Cleveland R2 (28) 6.125
Niles,O. R2 (28) 6.125
Weirton,W.Va. W6 ....5.975

SHEETS, ALUMINIZED

Butler,Pa. A10 .....8.625

SHEETS, Enameling Iron

Ashland,Ky.(8) A10 ...5.175
Cleveland R2 .....5.175
Gary,Ind. U5 .....5.175
GraniteCity,Ill. G4 ...5.875
Ind.Harbor,Ind. I-2 ...5.175
Irvin,Pa. U5 .....5.175
Middletown,O. A10 ....5.175
Youngstown Y1 .....5.175

BLUED STOCK, 29 ga.

Yorkville,O. W10 .....7.20
Follansbee,W.Va. F4 ...7.30
Follansbee (23) F4 ...7.175

SHEETS, Long Terne Steel
(Commercial Quality)

BeechBott'm,W.Va.W10 5.675
Gary,Ind. U5 .....5.675
Mansfield,O. E6 .....6.25
Middletown,O. A10 ....5.675
Niles,O. N12 .....6.00
Weirton,W.Va. W6 ....5.675

SHEETS, Long Terne, Ingot Iron

Middletown,O. A10 ....6.075

SHEETS, Well Casing

Fontana,Calif. K1 ....6.20

—STRIP—

STRIP, Hot-Rolled Carbon

Ala.City,Ala.(27) R2 ..3.925
Alton,Ill. L1 .....4.20
Ashland,Ky.(8) A10 ...3.925
Atlanta A11 .....4.175
Bessemer,Ala. T2 ....3.925
Bridgeport,Con.(10)S15 4.425
Buffalo (27) R2 .....3.925
Butler,Pa.(8) A10 ...3.925
Carnegie,Pa. S18 ....4.425
Conshohocken,Pa. A3 .4.325
Detroit M1 .....4.40
Ecorse,Mich. G5 .....4.225
Fairfield,Ala T2 .....3.925
Fontana,Calif. K1 .....4.70
Gary,Ind. U5 .....3.925
Houston,Tex. S5 .....4.425
Ind.Harbor,Ind. I-2,Y1.3.925
Johnstown,Pa.(25) B2..3.925
KansasCity,Mo.(9) S5..4.625
Lackw'na,N.Y.(32) B2.3.925
LosAngeles(25) B3 ....4.675
Milton,Pa. B6 .....4.35
Minnequa,Colo, C10 ...5.025
NewBritain(10) S15 ...4.425
N.Tonawanda,N.Y. B11.3.925
Pittsburg,Calif. C11 ...4.675
Riverdale,Ill. A1 .....3.925
SanFrancisco S7 .....5.10
Seattle(25) B3 .....4.925
Seattle N14 .....4.925
Sharon,Pa. S3 .....4.225
So.Chicago,Ill. W14 ....3.925
So.SanFrancisco(25)B3.4.675
SparrowsPoint,Md. B2 ..3.925
Torrance,Calif. C11 ...4.675
Warren,O. R2 .....3.925
Weirton,W.Va. W6 ....4.025
Youngstown Y1, U5 ...3.925

STRIP, Hot-Rolled Alloy

Bridgeport,Conn.(10)S15 6.45
Carnegie,Pa. S18 .....6.45
Fontana,Calif. K1 .....7.80
Gary,Ind. U5 .....6.40
Houston,Tex. S5 .....6.90
KansasCity,Mo. S5 ....7.10
LosAngeles B3 .....7.60
NewBritn.,Conn.(10)S15 6.45
Sharon,Pa. S3 .....6.45
So.Chicago W14 .....6.40
Youngstown U5 .....6.40

STRIP, Hot-Rolled
High-Strength Low-Alloy

Bessemer,Ala. T2 ....5.65
Conshohocken,Pa. A3 ..6.20
Ecorse,Mich. G5 .....6.50
Fairfield,Ala. T2 .....5.65
Fontana,Calif. K1 .....7.05
Gary,Ind. U5 .....5.95
Ind.Harbor,Ind. I-2 ....5.95
Ind.Harbor,Ind. Y1 ....6.45
Lackawanna,N.Y. B2 ..6.00
LosAngeles(25) B3 ....6.40
Seattle(25) B3 .....6.65
Sharon,Pa. S3 .....5.95
So.SanFrancisco(25)B3 .6.40
SparrowsPoint,Md. B2 ..6.00
Warren,O. R2 .....5.95
Weirton,W.Va. W6 ....6.30
Youngstown Y1 .....6.45
Youngstown U5 .....5.95

STRIP, Hot-Rolled Ingot Iron

Ashland,Ky.(8) A10 ...4.175
Warren,O. R2 .....4.525

STRIP, Cold-Rolled Carbon

Anderson,Ind. G6 .....5.80
Bridgeprt,Conn.(10) S15.6.15
Butler,Pa. A10 .....5.45
Cleveland A7, J5 .....5.45
Dearborn,Mich. D3 ....6.05
Detroit D2 .....5.95
Detroit M1 .....5.45
Dover,O. G6 .....5.80
Ecorse,Mich. G5 .....5.65
Follansbee,W.Va. F4 ...5.45
Fontana,Calif. K1 .....7.35
FranklinPark,Ill.(40) T6.5.70
Ind.Harbor,Ind. I-2 ...5.70
Lackawanna,N.Y. B2 ...5.45
LosAngeles C1 .....7.50
Mattapan,Mass. T6 ....6.30
Middletown,O. A10 ....5.45
NewBritain(10) S15 ....6.15
NewCastle,Pa.(14) B4 ..5.45
NewCastle,Pa. E5 ....5.95
NewHaven,Conn. A7 ....5.95
NewHaven,Conn. D2 ...6.20
Pawtucket,R.I. R3 ....6.80
Pawtucket,R.I.(21) N8..6.65
Riverdale,Ill. (40) A1 ..5.70
Rome,N.Y.(29) R6 ....5.45
Sharon,Pa. S3 .....5.80
SparrowsPoint,Md. B2 ..5.45
Trenton,N.J. R5 .....7.00
Wall'ford,Conn. W2(50) .6.40
Warren,O.(40) T5 .....5.95
Warren,O. R2 .....5.45
Weirton,W.Va. W6 ....5.45
Worcester,Mass. W19....7.05
Youngstown C8 .....5.95
Youngstown Y1 .....5.45

STRIP, Cold-Rolled Alloy Steel

Bridgeprt,Conn.(10)S15 12.15
Carnegie,Pa. S18 .....12.00
Cleveland A7 .....12.00
Dover,O. G6 .....12.00
Fontana,Calif. K1 ....13.65
Harrison,N.J. C18 ....12.00
NewBritn,Conn.(10)S15 12.15
Pawtucket,R.I.(11) N8.12.15
Pawtucket,R.I.(12) N8.12.45
Sharon,Pa. S3 .....12.00
Worcester,Mass. A7 ..12.30
Youngstown C8 .....12.00

STRIP, Cold-Rolled
High-Strength Low-Alloy

Cleveland J5 .....7.80
Cleveland A7 .....8.15
Dearborn,Mich. D3 ....7.90
Dover,O. G6 .....8.00
Ecorse,Mich. G5 .....8.50
Lackawanna,N.Y. B2 ..8.15
Sharon,Pa. S3 .....7.65
SparrowsPoint,Md. 8.15
Warren,O. R2 .....7.60
Weirton,W.Va. W6 ....8.30
Youngstown Y1 .....8.30

STRIP, Cold-Rolled Ingot Iron

Warren,O. R2 .....6.05

STRIP, Electro Galvanized

Dover,O. G6 .....5.70
Warren,O. T5 .....5.70
Weirton,W.Va. W6 ....5.45
Youngstown C8 .....5.95

TIGHT COOPERAGE HOOP

Atlanta A11 .....4.65
Riverdale,Ill. A1 .....4.50
Sharon,Pa. S3 .....4.55
Youngstown U5 .....4.35

Key to Producers

A1 Acme Steel Co.
A3 Alan Wood Steel Co.
A4 Allegheny Ludlum Steel
A7 American Steel & Wire
A9 Angell Nail & Chaplet
A10 Armco Steel Corp.
A11 Atlantic Steel Co.
A13 American Cladmetals Co.

B1 Babcock & Wilcox Co.
B2 Bethlehem Steel Co.
B3 Beth. Pac. Coast Steel
B4 Blair Strip Steel Co.
B5 Bliss & Laughlin Inc.
B6 Boiardi Steel Corp.
B8 Braeburn Alloy Steel
B11 Buffalo Bolt Co.
B12 Buffalo Steel Div. H. K. Porter Co.
B14 A. M. Byers Co.
B15 J. Bishop & Co.

C1 Calstrip Steel Corp.
C2 Calumet Steel Div., Borg-Warner Corp.
C4 Carpenter Steel Co.
C5 Central Iron & Steel Div. Barium Steel Corp.
C7 Cleve. Cold Rolling Mills
C8 Cold Metal Products Co.
C9 Colonial Steel Co.
C10 Colorado Fuel & Iron
C11 Columbia-Geneva Steel
C12 Columbia Steel & Shaft.
C13 Columbia Tool Steel Co.
C14 Compressed Steel Shaft.
C16 Continental Steel Corp.
C17 Copperweld Steel Co.
C18 Crucible Steel Co.
C19 Cumberland Steel Co.
C20 Cuyahoga Steel & Wire
C22 Claymont Steel Products Dept., Wickwire Spencer Steel Division
C23 Charter Wire Products
C24 G. O. Carlson Inc.

D2 Detroit Steel Corp.
D3 Detroit Tube & Steel
D4 Disston & Sons, Henry
D6 Driver Harris Co.
D7 Dickson Weatherproof Nail Co.
D8 Damascus Tube Co.
D9 Wilbur D. Driver Co.

E1 Eastern Gas&Fuel Assoc.
E2 Eastern Stainless Steel
E4 Electro Metallurgical Co.
E5 Elliott Bros. Steel Co.
E6 Empire Steel Corp.

F2 Firth Sterling Inc.
F3 Fitzsimons Steel Co.
F4 Follansbee Steel Corp.
F5 Franklin Steel Div., Borg-Warner Corp.
F6 Fretz-Moon Tube Co.
F7 Ft. Howard Steel & Wire
F8 Ft. Wayne Metals Co.

G2 Globe Iron Co.
G4 Granite City Steel Co.
G5 Great Lake Steel Corp.
G6 Greer Steel Co.

H1 Hanna Furnace Corp.
H7 Helical Tube Co.

I-1 Igoe Bros. Inc.
I-2 Inland Steel Co.
I-3 Interlake Iron Corp.
I-4 Ingersoll Steel Div., Borg-Warner Corp.
I-7 Indiana Steel & Wire Co.

J1 Jackson Iron & Steel Co.
J3 Jessop Steel Co.
J4 Johnson Steel & Wire Co.
J5 Jones & Laughlin Steel
J6 Joslyn Mfg. & Supply
J7 Judson Steel Corp.
J8 Jersey Shore Steel Co.

K1 Kaiser Steel Corp.
K2 Keokuk Electro-Metals
K3 Keystone Drawn Steel
K4 Keystone Steel & Wire
K7 Kenmore Metals Corp.

L1 Laclede Steel Co.
L2 LaSalle Steel Co.
L3 Latrobe Steel Co.
L5 Lockhart Iron & Steel
L6 Lone Star Steel Co.
L7 Lukens Steel Co.

M1 McLouth Steel Corp.
M4 Mahoning Valley Steel
M5 Medart Co.
M6 Mercer Tube & Mfg. Co.
M8 Mid-States Steel & Wire
M12 Moltrup Steel Products
M13 Monarch Steel Co.
M16 Md. Fine & Special Wire
M17 Metal Forming Corp.

N2 National Supply Co.
N3 National Tube Div.
N5 Nelsen Steel & Wire Co.
N6 NewEng.HighCarb.Wire
N8 Newman-Crosby Steel
N9 Newport Steel Corp.
N12 Niles Rolling Mill Div.
N14 Nrthwst.Steel Roll. Mills
N15 Northwestern S.&W.Co.
N16 New Delphos Mfg. Co.

O3 Oliver Iron & Steel Corp.
O4 Oregon Steel Mills

P1 Pacific States Steel Corp.
P4 Phoenix Iron & Steel Co.
P5 Pilgrim Drawn Steel
P6 Pittsburgh Coke & Chem.
P7 Pittsburgh Steel Co.
P11 Pollak Steel Co.
P12 Portsmouth Division Detroit Steel Corp.
P13 Precision Drawn Steel
P14 Pitts. Screw & Bolt Co.
P15 Pittsburgh Metallurgical
P16 Page Steel & Wire Div., Amer. Chain & Cable
P17 Plymouth Steel Co.

R1 Reeves Steel & Mfg. Co.
R2 Republic Steel Corp.
R3 Rhode Island Steel Corp.
R5 Roebling's Sons, Jonn A.
R6 Rome Strip Steel Co.
R7 Rotary Electric Steel Co.
R8 RellianceDiv.,EatonMfg.
R9 Rome Mfg. Co.

S1 Seneca Wire & Mfg. Co.
S3 Sharon Steel Corp.
S4 Sharon Tube Co.
S5 Sheffield Steel Corp.
S6 Shenango Furnace Co.
S7 Simmons Co.
S8 Simonds Saw & Steel Co.
S13 Standard Forgings Corp.
S14 Standard Tube Co.
S15 Stanley Works
S16 Struthers Iron & Steel
S17 Superior Drawn Steel Co.
S18 Superior Steel Corp.
S19 Sweet's Steel Co.
S20 Southern States Steel
S25 StainlessWeldedProducts
S26 Specialty Wire Co. Inc.

T2 Tenn. Coal & Iron Div.
T3 Tenn. Prod. & Chem.
T4 Texas Steel Co.
T5 Thomas Strip Division, Pittsburgh Steel Co.
T6 Thompson Wire Co.
T7 Timken Roller Bearing
T9 Tonawanda Iron Div., Am. Rad. & Stan. San.
T13 Tube Methods Inc.

U4 Universal-Cyclops Steel
U5 United States Steel Corp.
U6 U. S. Pipe & Foundry

V2 Vanadium-Alloys Steel
V3 Vulcan Crucible Steel Co.

W1 Wallace Barnes Co.
W2 Wallingford Steel Co.
W3 Washburn Wire Co.
W4 Washington Steel Corp.
W6 Weirton Steel Co.
W7 W. Va. Steel & Mfg. Co.
W8 West.Auto.Mach.Screw
W9 Wheatland Tube Co.
W10 Wheeling Steel Corp.
W12 Wickwire Spencer Steel Div.,Colo. Fuel & Iron
W13 Wilson Steel & Wire Co.
W14 Wisconsin Steel Div., International Harvester
W15 Woodward Iron Co.
W18 Wyckoff Steel Co.
W19 Worcester Pressed Steel

Y1 Youngstown Sheet&Tube

STRIP, Cold-Finished, Spring Steel (Annealed)	0.26-0.40C	0.41-0.60C	0.61-0.80C	0.81-1.05C	1.06-1.35C
Berea,O. C7	...	8.00	8.60	10.55	12.85
Bridgeport,Conn.(10) S15	6.15	8.00	8.60	10.55	12.85
Bristol,Conn. W1	...	...	8.90	10.85	....
Carnegie,Pa. S18	...	8.00	8.60	10.55	12.85
Cleveland A7	5.45	7.65	8.60	10.55	12.85
Dearbon,Mich. D3	6.05	8.25	8.85	....	....
Detroit D2	6.45	7.85	8.45	10.55	....
Dover,O. G6	6.05	8.00	8.60	10.55	12.85
FranklinPark,Ill. T6	5.80	7.80	8.75	10.70	....
Harrison,N.J. C18	...	...	8.90	10.85	13.15
Mattapan,Mass. T6	6.30	7.95	8.90	10.85	13.15
NewBritn., Conn.(10) S15	6.15	8.00	8.60	10.55	12.85
NewCastle,Pa. B4	5.80	8.00	8.60	....	....
NewCastle,Pa. E5	5.95	8.00	8.60	10.55	12.85
NewHaven,Conn. D2	6.70	7.95	8.55	10.50	....
NewYork W3	...	8.30	8.90	10.85	13.15
Pawtucket,R.I. N8:					
Cleve.orPitts.Base	...	8.00	8.60	10.55	12.85
Worcester,Mass.,Base	6.65	7.95	8.90	10.85	13.15
Sharon,Pa. S3	...	8.00	8.60	10.55	12.85
Trenton,N.J. R5	...	8.30	8.90	10.85	13.15
Wallingford,Conn. W2	6.65	7.95	8.90	10.85	13.15
Warren,O. T5	6.20	8.00	8.60	10.55	12.85
Weirton,W.Va. W6	5.80	8.00	8.60	10.55	12.85
Worcester,Mass. A7	5.75	7.95	8.90	10.85	13.15
Worcester,Mass. T6	6.30	7.95	8.90	10.85	13.15
Youngstown C8	...	8.00	8.60	10.55	12.85
Spring Steel (Tempered)					
Bristol,Conn. W1	...	...	12.50	15.00	....
FranklinPark,Ill. T6	...	...	12.50	15.00	18.00
Trenton,N.J. R5	...	...	12.50	15.00	18.00
Harrison,N.J. C18	...	...	12.50	15.00	18.00
NewYork W3	...	...	12.50	15.00	18.00
Worcester,Mass. T6	...	...	12.50	15.00	18.00
Youngstown C8	...	...	*12.50*	*15.00*	*18.00*

SILICON STEEL

SHEETS, SILICON, H.R. or C.R.(22 Ga.) COILS (cut lengths ½c lower)	Arma-ture Field	Arma-ture	Elec-tric	Motor	Dyna-mo
BeechBottom W10 (cut lengths)	...	...	8.35	9.60	10.40
Brackenridge,Pa. A4	...	...	8.85	10.10	10.90
GraniteCity,Ill. G4 (cut lengths)	...	...	8.55	9.80	...
IndianaHarbor,Ind. I-2	8.05	8.35	8.85	(34)	...
Mansfield,O. E6 (cut lengths)	7.55	7.85	8.35	9.60	10.40
Newport,Ky. N9 (cut lengths)	...	7.85	8.35	9.60	10.40
Niles,O. N12 (cut lengths)	...	7.55	7.85	8.35	...
Vandergrift,Pa. U5	...	...	8.35	8.85	10.10 10.90
Warren,O. R2	...	8.05	8.35	8.85	10.10 10.90
Zanesville,O. A10	...	...	8.35	8.85	10.10 10.90

SHEETS, SILICON (22 Ga. Base) COILS (Cut Lengths ½c lower)	Transformer Grade 72	65	58	52
BeechBottom W10 (cut lengths)	10.95	11.50	12.20	13.00
Brackenridge,Pa. A4	11.45	....	....	....
Newport,Ky. N9 (cut lengths)	10.95	....	....	....
Vandergrift,Pa. U5	11.45	12.00	12.70	13.50
Warren,O. R2	11.45	....	....	....
Zanesville,O. A10	11.45	12.00	12.70	13.50

H.R. or C.R. COILS AND CUT LENGTHS, SILICON (22 Ga.)	T-100	T-90	T-80	T-73
Butler,Pa. A10 (C.R.)	....	....	16.05	16.55
Vandegrift, Pa. U5	14.00	14.85	15.85	16.35

TIN MILL PRODUCTS

TIN PLATE, Electrolytic (Base Box)	0.25 lb	0.50 lb	0.75 lb
Aliquippa,Pa. J5	$7.40	$7.65	$8.05
Fairfield,Ala. T2	7.50	7.75	8.15
Fairless,Pa. U5	7.50	7.75	8.15
Gary,Ind. U5	7.40	7.65	8.05
GraniteCity,Ill. G4	7.60	7.85	8.25
IndianaHarbor,Ind. I-2, Y1	7.40	7.65	8.05
Irvin,Pa. U5	7.40	7.65	8.05
Niles,O. R2	7.40	...	...
Pittsburg,Calif. C11	8.15	8.40	8.80
SparrowsPoint,Md. B2	7.50	7.75	8.15
Weirton,W.Va. W6	7.40	7.65	8.05
Yorkville,O. W10	7.40	7.65	8.05

TIN PLATE, American	1.25 Coke (Base Box) lb	1.50 lb
Aliquippa,Pa J5	$8.70	$8.95
Fairfield,Ala. T2	8.80	9.05
Fairless,Pa. U5	8.80	9.05
Gary,Ind. U5	8.70	8.95
Ind Har, I-2, Y1	8.70	8.95
Irvin,Pa. U5	8.70	8.95
Pitts.,Cal. C11	9.45	9.70
Sp.Pt.,Md. B2	8.80	9.05
Warren,O. R2	8.70	...
Weirton,W.Va.W6	8.70	8.95
Yorkville,O. W10	8.70	8.95

BLACK PLATE (Base Box)

Aliquippa,Pa. J5	$8.50
Fairfield,Ala. T2	6.60
Fairless,Pa. U5	6.60
Gary,Ind. U5	6.50
GraniteCity,Ill. G4	6.70
Ind.Harbor,Ind. I-2,Y1	6.50
Irvin,Pa. U5	6.50
Niles,O. R2	6.50
Pittsburg,Calif. C11	7.25
SparrowsPoint,Md. B2	6.60
Warren,O. R2	6.50
Weirton,W.Va. W6	6.50
Yorkville,O. W10	6.50

HOLLOWARE ENAMELING

Black Plate (29 gage)	
Follansbee,W.Va. F4	6.10
Gary,Ind. U5	6.10
GraniteCity,Ill. G4	6.30
Ind.Harbor,Ind. Y1	6.10
Irvin,Pa. U5	6.10
Yorkville,O. W10	6.55

MANUFACTURING TERNES (Special Coated)

Fairfield,Ala. T2	$7.85
Gary,Ind. U5	7.75
Irvin,Pa. U5	7.75
Yorkville,O. W10	7.75

MANUFACTURING TERNES, 8 lb (Commercial Quality)

Gary,Ind. U5	$9.75
Yorkville,O. W10	9.75

MANUFACTURING TERNES, LT. Coated, 6 lb

Yorkville,O. W10	$8.65

ROOFING SHORT TERNES (8 lb Coated)

Gary,Ind. U5	9.75

—WIRE—

WIRE, Manufacturers Bright, Low Carbon

AlabamaCity,Ala. R2	5.525
Aliquippa,Pa. J5	5.525
Atlanta A11	5.775
Alton,Ill. L1	5.75
Bartonville,Ill. K4	5.625
Buffalo W12	5.525
Chicago W13	5.525
Cleveland A7, C20	5.525
Crawfordsville,Ind. M8	5.625
Donora,Pa. A7	5.525
Duluth,Minn. A7	5.525
Fairfield,Ala. T2	5.525
Fostoria,O. (24) S1	6.02
Houston S5	5.925
Johnstown,Pa. B2	5.525
Joliet,Ill. A7	5.525
KansasCity,Mo. S5	6.125
Kokomo,Ind. C16	5.625
LosAngeles B3	6.475
Minnequa,Colo. C10	5.775
Monessen,Pa. P7	5.525
No.Tonawanda B11	5.525
Palmer,Mass. W12	5.825
Pittsburg,Calif. C11	6.475
Portsmouth,O. P12	5.725
Rankin,Pa. A7	5.525
So.Chicago,Ill. R2	5.525
So.SanFrancisco C10	6.475
SparrowsPoint,Md. B2	5.625
Sterling,Ill. (1) N15	5.525
Struthers,O. Y1	5.525
Torrance,Calif. C11	6.475
Waukegan,Ill. A7	5.525
Worcester,Mass. A7	5.825

WIRE, MB Spring, High Carbon

Aliquippa,Pa. J5	6.925
Alton,Ill. L1	7.15
Bartonville,Ill. K4	7.025
Buffalo W12	6.925
Cleveland A7	6.925
Donora,Pa. A7	6.925
Duluth,Minn. A7	6.925
Fostoria,O. S1	6.925
Johnstown,Pa B2	6.925
Milbury (12\ N6	8.725
Minnequa,Colo. C10	7.175
Monessen,Pa. P7	6.925
Monessen,Pa. P16	6.95
Muncie,Ind. I-7	7.125
Palmer,Mass. W12	7.225
Pittsburg,Calif. C11	7.875
Roebling,N.J. R5	7.225
Portsmouth,O. P12	6.925
So.Chicago,Ill. R2	6.925
So.SanFran. C10	7.875
SparrowsPt.,Md. B2	7.025
Struthers,O. Y1	6.925
Trenton,N.J. A7	7.225
Waukegan,Ill. A7	6.925
Worcester A7, J4	7.225
Worcester T6, W12	7.225

WIRE, Upholstery Spring

Aliquippa,Pa. J5	6.625
Alton,Ill. L1	6.85
Buffalo W12	6.625
Cleveland A7	6.625
Donora,Pa. A7	6.625
Duluth,Minn. A7	6.625
Johnstown,Pa. B2	6.625
LosAngeles B3	7.575
Minnequa,Colo. C10	6.875
Monessen,Pa. P7	6.625
Monessen,Pa. P16	6.625
NewHaven,Conn. A7	6.925
Palmer,Mass. W12	6.925
Pittsburg,Calif. C11	7.575
Portsmouth,O. P12	6.625
Roebling,N.J. R5	6.925
So. Chicago,Ill. R2	6.625
So. SanFrancisco C10	7.575
SparrowsPoint,Md. B2	6.725
Torrance,Calif. C11	7.575
Trenton,N.J. A7	6.925
Waukegan,Ill. A7	6.625
Worcester,Mass. A7	6.925

WIRE, Fine & Weaving (8"Coils)

Alton,Ill. L1	10.75
Bartonville,Ill. K4	10.65
Buffalo W12	10.55
Chicago W13	10.55
Cleveland A7	10.55
Crawf'sville,Ind. M8	10.55
Fostoria,O. S1	10.55
Johnstown,Pa. B2 (43)	8.90
Kokomo,Ind. C16	10.55
Monessen,Pa. P16	10.55
Muncie,Ind. I-7	10.75
Palmer,Mass. W12	10.85
Roebling,N.J. R5	10.85
So.SanFrancisco C10	10.90
Waukegan,Ill. A7	10.55
Worcester,Mass. A7	10.85
Worcester,Mass. T6	10.85

WIRE, Galv'd ACSR for Cores

Bartonville,Ill. K4	9.50
Johnstown,Pa. B2	9.50
Monessen,Pa. P16	9.50
Muncie,Ind. I-7	9.70
Roebling,N.J. R5	9.80
SparrowsPt.,Md. B2	9.60

ROPE WIRE (A)

Alton,Ill. L1	9.45
Bartonville,Ill. K4	9.35
Buffalo W12	9.35
Fostoria,O. S1	9.35
Johnstown,Pa. B2	9.35
Monessen,Pa. P7, P16	9.35
Muncie,Ind I-7	9.55
Palmer,Mass. W12	9.65
Portsmouth,O. P12	9.35
Roebling,N.J. R5	9.65
SparrowsPt. B2	9.45
Struthers,O. Y1	9.35
Worcester J4, T6	9.65

(A) Plow and Mild Plow; add 0.25c for improved plow.

WIRE, Tire Bead

Alton,Ill. L1	12.75
Bartonville,Ill. K4	12.65
Monessen,Pa. P16	12.00
Roebling,N.J. R5	12.85

WIRE, Cold-Rolled Flat

Anderson,Ind. G6	7.45
Buffalo W12	7.45
Cleveland A7	7.45
Craf'sville,Ind. M8	7.55
Dover,O. G6	7.45
Fostoria,O. S1	7.45
Kokomo,Ind. C16	7.55
Franklin Park,Ill. T6	7.60
Massillon,O. R8	7.45
Monessen,Pa. P16	*8.00*
Monessen,Pa. P7	7.45
Pawtkt.R.I.(12) N8	7.75
Trenton,N.J. R5	7.75
Worcester A7, T6 W12	7.75

WIRE, Merchant Quality

(6 to 8 gage)	An'ld. Galv.
AlabamaCity R2	6.675 7.075
Aliquippa J5	6.675 7.20*
Atlanta A11	6.925 7.475
Bartonville(19)K4	6.675 7.225
Buffalo W12	6.675 7.075
Cleveland A7	6.675 ....
CrawfordsvilleM8	6.775 7.325
Donora,Pa. A7	6.675 7.075†
Duluth,Minn. A7	6.675 7.075†
Fairfield T2	6.675 7.075†
Houston,Tex. S5	7.075 7.475
JohnstownB2(48)	6.675 7.225
Joliet,Ill. A7	6.675 7.075†
KansasCity,Mo.S5	7.275 7.675
Kokomo C16	6.775 7.175
LosAngeles B3	7.625 ....
Minnequa C10	6.925 7.325**
Monessen P7(48)	6.675 7.225
Palmer W12	6.975 7.375
Pitts.Calif. C11	7.625 8.025†
Prtsmth (18)P12	6.575 ....
Rankin A7	6.675 7.075†
So.Chicago R2	6.675 6.325
So.S.Frn.(48) C10	7.625 8.025**
Spar'wsPt. B2(48)	6.775 7.325
Steri'g(1)(48)N15	6.675 7.225
Struthers,O. Y1	6.675 7.175
Worcester A7	6.975 ....

*Based on 10c zinc; †5c zinc; **Subject to zinc equalization extras.

WIRE (16 gage)	An'ld. Galv. Stone Stone
Aliquippa J5	10.63 12.72*
Bartonville(19)K4	10.73 12.51
Cleveland A7	12.50 ....
Crawfordsville M8	12.50 14.35
Fostoria,O. S1	12.60 14.15
Johnstown B2	12.50 14.35
Kokomo C16	12.60 14.15
Min'qua C10	12.75 14.45**
Palmer,Mass.W12	12.50 14.05
Pitts.Calif. C11	12.85 14.40†
SparrowsPt. B2	12.60 14.45
Sterling(1) N15	10.73 12.15
Waukegan A7	12.50 14.05†
Worcester A7	12.80 ....

*Based on 11c zinc; †5c zinc; **Subject to zinc equalization extras.

WIRE, Barbed Col.

AlabamaCity,Ala. R2	153
Aliquippa J5	150*
Atlanta A11	159
Bartonville,Ill.(19) K4	156
Crawfordsville,Ind. M8	159
Donora,Pa. A7	153†
Duluth,Minn. A7	153†
Fairfield,Ala. T2	153†
Houston,Tex. S5	161
Johnstown,Pa. B2	156
Joliet,Ill. A7	153
KansasCity,Mo. S5	165
Kokomo,Ind. C16	155
Minnequa,Colo. C10	159**
Monessen,Pa. P7	157
Pittsburg,Calif. C11	173†
Rankin,Pa. A7	153†
So.Chicago,Ill. R2	153
S.SanFrancisco C10	173**
SparrowsPoint,Md. B2	158
Sterling,Ill.(1) N15	156

†Based on 5c zinc; *11c zinc; **Subject to zinc equalization extras.

WOVEN FENCE, 9-15½ Ga. Col.

AlabamaCity,Ala. R2	140
Ala.City,Ala.17 ga. R2	235
Ala.City,Ala.18 ga. R2	245
Aliqp'pa,Pa.9-14½ga.J5	143*
Atlanta A11	146
Bartonville,Ill.(19) K4	143
Crawfordsville,Ind. M8	145
Donora,Pa. A7	140†
Duluth,Minn. A7	140†
Fairfield,Ala. T2	140†
Houston,Tex. S5	148
Johnstown,Pa. B2	143
Johnstown 17ga.,6" B2	234
Johnstown, 4"	237
Joliet,Ill. A7	140†
KansasCity,Mo. S5	152
Kokomo,Ind. C16	142
Minnequa,Colo. C10	143**
Monessen,Pa. 9 ga. P7	145
Pittsburg,Calif. C11	163†
Rankin,Pa. A7	140†
So.Chicago,Ill. R2	140
Sterling,Ill. (1) N15	143

†Based on 5c zinc; *11c zinc; **Subject to zinc equalization extras.

BALE TIES, Single Loop Col.

AlabamaCity,Ala. R2	149
Atlanta A11	152
Bartonville,Ill.(19) K4	149
Crawfordsville,Ind. M8	151
Donora,Pa. A7	149
Duluth,Minn. A7	149
Fairfield,Ala. T2	149
Joliet,Ill. A7	149
KansasCity,Mo. S5	161
Kokomo,Ind. C16	151
Minnequa,Colo. C10	154
Pittsburg,Calif. C11	173
So.Chicago,Ill. R2	149
So.SanFran.,Calif. C10	173
SparrowsPoint,Md. B2	151
Sterling,Ill.(1) N15	149

NAILS, Stock To dealers & mfrs. (7) Col.

AlabamaCity,Ala. R2	131
Aliquippa,Pa. J5	131
Atlanta A11	134
Bartonville,Ill. (19) K4	131
Chicago,Ill. W13	131
Cleveland A9	137
Crawfordsville,Ind. M8	133
Donora,Pa. A7	131
Duluth,Minn. A7	131
Fairfield,Ala. T2	131
Galveston,Tex. D7	139
Houston,Tex. S5	139
Johnstown,Pa. B2	131
Joliet,Ill. A7	131
KansasCity,Mo. S5	143
Kokomo,Ind. C16	133
Minnequa,Colo. C10	136
Monessen,Pa. P7	131
Pittsburg,Calif. C11	150
Portsmouth,O. P12	132
Rankin,Pa. A7	131
So.Chicago,Ill. R2	131
SparrowsPt.,Md. B2	133
Sterling,Ill. (1) N15	131
Worcester,Mass. A7	137

NAILS, Cut (100 lb keg) to dealers (33)

Conshohocken,Pa. A3	$8.00
Wheeling,W.Va. W10	8.00

STAPLES, Polished, Stock To dealers & mfrs. (7) Col.

AlabamaCity,Ala. R2	131
Aliquippa,Pa. J5	133
Atlanta A11	136
Bartonville,Ill. (19) K4	133
Crawfordsville,Ind. M8	135
Donora,Pa. A7	133
Duluth,Minn. A7	133
Fairfield,Ala. T2	133
Johnstown,Pa. B2	133
Joliet,Ill. A7	133
Kokomo,Ind. C16	135
Minnequa,Colo. C10	138
Monessen,Pa. P7	133
Pittsburg,Calif. C11	152
Portsmouth,O. P12	132
Rankin,Pa. A7	133
So.Chicago,Ill. R2	131
SparrowsPt.Md. B2	135
Sterling,Ill. (1) N15	133
Worcester,Mass. A7	139

—FENCE POSTS—

	Col.
ChicagoHts.,Ill. C2, I-2	145
Duluth,Minn. A7 (49)	143
Franklin,Pa. F5	145
Johnstown,Pa. B2	145
Marion,O. P11	145
Minnequa,Colo. C10	150
Moline,Ill. R2	145
So.Chicago,Ill. R2	145
Tonawanda,N.Y. B12	148
Williamsport,Pa. S19	158

SEAMLESS STANDARD PIPE, T & C

Carload discounts from list, %

Size—Inches	2		2½		3		3½		4		5		6	
List Per Ft	37c		58.5c		76.5c		92c		$1.09		$1.48		$1.92	
Pounds Per Ft	3.68		5.82		7.62		9.20		10.89		14.81		19.18	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	15.75	list	19.75	2.5	22.25	5	23.75	6.5	23.75	6.5	23	5.75	25.5	8.25
Ambridge, Pa. N2 (†)	18.25	...	22.25	...	24.75	...	26.25	...	26.25	...	26.00	...	28.50	...
Corain, O. N3 (*)	15.75	4.5	19.75	5.5	22.25	8	23.75	9.5	23.75	9.50	23	8.75	25.5	11.25
Youngstown Y1 (††)	15.75	list	19.75	2.50	22.25	5.00	23.75	6.50	23.75	6.50	23.00	5.75	25.50	8.25

ELECTRIC WELD STANDARD PIPE, T & C

Youngstown R2 (††)	15.75	list	19.75	2.5	22.25	5.0	23.75	6.5	23.75	6.5	23.0	5.75	25.5	8.25

BUTTWELD STANDARD PIPE, T & C

Carload discounts from list, %

Size—Inches	⅛		¼		⅜		½		¾		1		1¼		1½	
List Per Ft	5.5c		6c		6c		8.5c		11.5c		17c		23c		27.5c	
Pounds Per Ft	0.24		0.42		0.57		0.85		1.13		1.68		2.28		2.73	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv.
Aliquippa, Pa. J5 (‡)	...	...	....	...	....	....	26.25	10	29.25	14	31.75	17.5	34.25	18.5	34.75	19.5
Alton, Ill. L1 (§)	...	...	....	...	....	....	23.25	7	26.25	11	28.75	14.5	31.25	15.5	31.75	16.5
Benwood, W. Va. W10(††)	25.5	+0.75	17.75	+6	10.25	+10.75	26.25	10	29.25	14	31.75	17.5	34.25	18.5	34.75	19.5
Butler, Pa. F6 (†)	26.5	+2.75	19.5	+7.25	12.5	+13	....	..	....	..	....	..	....	..	....	..
Etna, Pa. N2 (†)	28	+1.25	22	+4.75	16	+9.5	28.75	9.5	31.75	13.5	34.25	17	36.75	18.75	37.25	19.75
Fontana, Calif. K1 (††)	...	...	....	...	....	....	13.25	+3	16.25	1	18.75	4.5	21.25	5.5	21.75	6.5
Ind. Harbor Y1 (††)	...	...	....	...	....	....	25.25	9	28.25	13	30.75	16.5	33.25	17.5	33.75	18.5
Lorain, O. N3 (*)	...	...	....	...	....	....	26.25	16	29.25	20	31.75	23.5	34.25	23	34.75	24
Sharon, Pa. S4 (†)	26.5	—0.25	19.5	+4.25	12.5	+8.5	....	..	....	..	....	..	....	..	....	..
Sharon, Pa. M6	...	...	....	...	....	....	26.25	10	29.25	14	31.75	17.5	34.25	18.5	34.75	19.5
Sparrows Pt., Md. B2 (§)	24.5	+1.75	17.5	+6.25	10.5	+10.5	24.25	8	27.25	12	29.75	15.5	32.25	16.5	32.75	17.5
Youngstown Y1 (††)	...	...	....	...	....	....	26.25	10	29.25	14	31.75	17.5	34.25	18.5	34.75	19.5
Youngstown Y1 (††)	...	...	....	...	....	....	26.25	10	29.25	14	31.75	17.5	34.25	18.5	34.75	19.5
Wheatland, Pa. W9 (‡)	24.5	+1.75	17.5	+6.25	10.5	+10.5	26.25	10	29.25	14	31.75	17.50	34.25	18.50	34.75	19.50

Size—Inches	2		2½		3		3½		4	
List Per Ft.	37c		58.5c		76.5c		92c		$1.09	
Pounds Per Ft.	3.68		5.82		7.62		9.20		10.89	
	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv	Blk	Galv
Aliquippa, Pa. J5 (‡)	35.25	20	36.75	20	36.75	20	....	....	....	....
Alton, Ill. L1 (§)	32.25	17	33.75	17	33.75	17	....	....	....	....
Benwood, W.Va. W10(††)	35.25	20	36.75	20	36.75	20	27.75	10.5	27.75	10.5
Etna, Pa. N2 (†)	37.75	20.25	39.25	21	39.25	21	30.25	11.5	30.25	11.5
Fontana, Calif. K1 (††)	22.25	7	23.75	7	23.75	7	....	....	....	....
Ind. Harbor, Ind Y1 (††)	34.25	19	35.75	19	35.75	19	....	....	....	....
Lorain, O. N3 (*)	35.25	24.5	36.75	23	36.75	23	....	....	....	....
Sharon, Pa. M6	35.25	20	36.75	20	36.75	20	....	....	....	....
Sparrows Pt., Md. B2 (§)	32.25	18	34.75	18	34.75	18	25.75	8.5	25.75	8.5
Youngstown R2 (††)	35.25	20	36 75	20	36.75	20	27.75	10.5	27.75	10.5
Youngstown Y1 (††)	35.25	20.00	36.75	20.00	36.75	20.00	....	....	....	....
Wheatland, Pa. W9 (‡)	35.25	20	36.75	20	36.75	20	....	....	....	....

Galvanized pipe discounts based on zinc price of: (†), 14c; (‡), 11c to under 12c; (*), 5c; (§), 11.00c; (††), 10.50c-11.50c; with discounts adjusted on price of zinc at time of shipment.

BOILER TUBES

Net base c.l prices, dollars per 100 ft, mill; minimum wall thickness, cut lengths 10 to 24 ft, inclusive.

O.D. In.	B.W. Gage	Seamless H.R.	Seamless C.D.	Elec. Weld H.R.
...	13	....	21.31	18.44
¼	13	....	25.24	18.12
½	13	23.12	27.89	20.01
¾	13	26.84	32.37	23.66
...	13	30.08	36.28	26.51
1¼	13	34.18	41.23	29.86
1¼	12	37.10	44.75	32.41
1½	12	40.51	48.86	35.70
1¾	12	43.85	52.90	38.66
2	12	45.92	55.39	41.23

RAILWAY MATERIALS

RAILS	Std. No. 1	Std. No. 2	Std. Tee Rails All No. 2	60 lb Under
Bessemer,Pa. U5	4.325	4.225	4.275	5.20
Linsley,Ala, T2	4.325	4.225	....	5.20
Fairfield,Ala, T2	....	....	....	5.20
Gary,Ind. U5	4.325	4.225	4.275	...
Huntington,W.Va. W7	....	....	....	5.20
IndianaHarbor,Ind. I-2	4.325	4.225	4.275	...
Johnstown,Pa. B2	....	....	...(16)	5.20
Lackawanna,N.Y. B2	4.325	4.225	....	5.20
Minnequa,Colo. C10	4.325	4.125	....	5.70
Steelton,Pa. B2	4.325	4.225	....	...
Williamsport,Pa. S19	....	....	....	5.20

TIE PLATES	
Fairfield,Ala. T2	5.125
Gary,Ind. U5	5.125
Ind.Harbor,Ind I-2	5.125
Lackawanna,N.Y. B2	5.125
Minnequa,Colo. C10	5.125
Pittsburg,Calif. C11	5.275
Seattle B3	5.275
Steelton,Pa. B2	5.125
Torrance,Calif. C11	5.275

TRACK BOLTS (20) Treated	
KansasCity,Mo. S5	11.00
Lebanon,Pa. (31) B2	10.75
Minnequa,Colo. C10	11.00
Pittsburgh P14	11.00
Pittsburgh O3	11.00

JOINT BARS	
Bessemer,Pa. U5	5.275
Fairfield,Ala. T2	5.275
Ind.Harbor,Ind. I-2	5.275
Joliet,Ill. U5	5.275
Lackawanna,N.Y. B2	5.275
Minnequa,Colo. C10	5.275
Steelton,Pa. B2	5.275

AXLES	
Ind.Harbor,Ind. S13	6.50
Johnstown,Pa. B2	6.50

STANDARD TRACK SPIKES	
Ind.Harbor,Ind. I-2, Y1	7.05
KansasCity,Mo. S5	7.30
Lebanon,Pa. B2	7.05
Minnequa,Colo C10	7.05
Pittsburgh J5	7.05
Seattle B3	7.55
So.Chicago,Ill. R2	7.05
Struthers,O. Y1	7.05
Youngstown R2	7.05

RIVETS

F.o.b. Cleveland, and/or freight equalized with Pittsburgh; f.o.b. Chicago, and/or freight equalized with Birmingham except where equalization is too great.

Structural ½-in.,larger 8.90c
⅞-in. under ..... 26.5 off

BOLTS, NUTS

CARRIAGE, MACHINE BOLTS

(F.o.b. midwestern plants, per cent off list for less than case lots to consumers)

6 in. and shorter:
½-in & smaller diam. 4
⅝-in. & ⅝-in. 5
¾-in. and larger .. 3
Longer than 6 in.:
All diams. ..... +4
Lag bolts, all diams.:
6 in. and shorter.... 12
over 6 in. long 8
Ribbed Necked Carriage 5
Blank 25
Plow 25
Step, Elevator, Tap and Sleigh Shoe 12
Tire Bolts ..... List
Boiler & Fitting-Up Bolts 23

NUTS

H.P. & C.P., regular & heavy:
Square, all sizes 58
H.P., Hex, regular & heavy:
¾" and smaller 58
⅞" to 1⅛", inclusive 60
1¼" to 1½", inclusive 62
1⅝" and larger 58
C.P. Hex, regular heavy:
All sizes 58
Hot Galv. Nuts (all types):
¾" and smaller 40
⅞" to 1½", inclusive 43
Finished Hex Nuts:
New standard, all sizes 58
Semifinished & Slotted Hex:
Regular and heavy, all sizes 58

SQUARE HEAD SET SCREWS

(Packaged; per cent off list)

1 in. diam x 6 in. and shorter 34
1 in. and smalled diam. x over 6 in. 20

HEADLESS SET SCREWS

(Packaged; per cent off list)

No. 10 and smaller ... 34
¼-in. diam & larger .. 14
N.F. thread, all diams.. 8

STEEL STOVE BOLTS

(F.o.b. plant, per cent off list in packages)

Plain finish .....47.5 & 10
Plated finishes .....30 & 10

HEXAGON CAP SCREWS

(1020 steel; packaged; per cent off list)

6 in. or shorter:
⅝-in. & smaller .. 38
¾-in. through 1 in. .. 22
Longer than 6 in.:
¾-in. and smaller .. 20
¾-in. through 1 in.. 2

METAL POWDERS

(Per pound, f.o.b. shipping point in ton lots for minus 100 mesh, except as otherwise noted)

	Cents
Sponge iron:	
98+ % Fe, annealed	18.00
Unannealed	14.50
Swedish, c.l.f. N.Y., c.l., in bags	11.25
Electrolytic iron:	
Annealed, 99.5% Fe.	42.50
Unannealed (99+ % Fe)	36.50
Unannealed (99+ % Fe) (minus 325 mesh)	53.50
Powder Flakes	48.50
Carbonyl Iron: 97.9-99.8% size 5 to 10 microns..83.00-148.00	
Aluminum:	
Carlots, freight allowed	31.00
Atomized, 500 lb drums, freight allowed	34.00
Antimony, 500 lb lots.	78.00
Brass, 20-ton lots	29.50-36.50
Bronze, 10-ton lots 51.00-60.00	
Copper:	
Electrolytic	43.25
Reduced	43.25
Lead	21.75
Magnesium 75.00-85.00	
Manganese:	
Minus 100 mesh	57.00
Minus 35 mesh	52.00
Minus 200 mesh	62.00
Nickel unannealed	89.50
Nickel-Silver 5-ton lots	47.00
Silicon	38.50
Solder	8.50*
Stainless Steel, 302 ...	91.00
Tin 14.00*	
Zinc, 10-ton lots..17.50-25.00	
Tungsten	Dollars
Melting grade, 99% 60 to 200 mesh:	
1000 lb and over ...	5.35
Less than 1000 lb ..	5.50
Chromium, electrolytic 99.9% Cr min.	3.50

* plus cost of metal.

Footnotes

(1) Chicago base.
(2) Angles, flats, bands.
(3) Merchant.
(4) Reinforcing.
(5) 1⅛" to 1 7/16"; 1 7/16" to 1 15/16" 4.58c; 1 15/16" to 7 5/16" 4.95c.
(6) Chicago or Birm. base.
(7) To jobbers, 3 cols. lower.
(8) 16 gage and heavier.
(9) 6 in. and narrower.
(10) Pittsburgh base.
(11) Cleveland & Pitts. base.
(12) Worcester, Mass. base.
(13) Add 0.25c for 17 Ga. & heavier.
(14) Gage 0.143 to 0.249 in.; for gage 0.142 and lighter, 5.80c.
(15) ⅛" and thinner.
(16) 40 lb and under.
(17) Flats only.
(18) To dealers.
(19) Chicago & Pitts. base.
(20) 0.25c off for untreated.
(21) New Haven, Conn., base.
(22) Del. San Francisco Bay area.
(23) 20 Ga. 36" wide.
(24) Deduct 0.20c, finer than 15 Ga.
(25) Bar mill bands.
(26) Reinforcing mill lengths, to fabricators; to consumers, 5.40c.
(27) Bar mill sizes.
(28) Bonderized.
(29) Youngstown base.
(30) Sheared; add 0.35c for universal mill.
(31) Not annealed.
(32) Rd. or square edge.
(33) To jobbers, deduct 20c.
(34) 9 60c for cut lengths.
(35) 72" and narrower.
(36) 54" and narrower.
(37) 15 gage & lighter: 60" & narrower.
(38) 14 gage & lighter: 48" and narrower.
(39) 48" and narrower.
(40) Lighter than 0.035"; 0.035" and heavier, 0.25c higher.
(41) 9.10c for cut lengths.
(42) Plus 0.375c per 100 lb.
(43) Plus 4.7% on base and extras.
(48) 6-7 gage.
(49) U-post; add 2 cols. for T-post.
(50) 0.025 gage; 6.55c for 0.026 to 0.068 gage; 6.65c for 0.069 gage and over.

STAINLESS STEEL MILL PRICES

(Representative prices, cents per pound; subject to current lists of extras)

AISI Type	Rerolling Ingots	Rerolling Slabs, Billets	Forging Billets	Seamless Tube Billets	H.R. Strip	Shapes; H.R. & C.F. Bars; Wire	Plates	Sheets	C.R. Strip; Flat Wire
301	16.25	20.50	29.50	34.25	29.75	35.25	37.25	46.25	38.25
302	17.25	22.75	29.75	34.50	32.00	35.50	37.50	46.50	41.50
302B	18.50	24.50	30.50	34.50	35.00	35.50	37.50	48.75	44.75
303	18.75	24.75	32.25	37.25	36.75	38.25	39.75	48.75	45.50
304	18.25	23.75	31.00	36.00	34.25	37.25	39.75	48.75	43.75
306	19.50	25.50	....	36.25	37.00	37.50	42.00	51.75	46.75
308	19.75	26.25	35.25	40.75	38.00	42.00	46.00	55.25	48.00
309	26.50	34.75	43.25	49.25	49.25	50.50	53.75	63.50	62.00
309S	28.50	37.50	47.50	54.50	54.00	55.50	59.00	68.50	68.50
310	33.00	43.25	56.75	66.25	67.50	67.50	69.00	72.25	78.75
314	....	....	....	....	....	....	69.00	74.50	....
316	28.00	36.25	46.75	54.50	55.00	55.50	59.00	64.50	66.50
317	33.00	43.50	58.25	66.75	67.50	68.25	70.75	77.00	79.25
318	33.50	44.00	55.25	64.50	66.25	65.50	68.75	78.00	80.25
321	22.75	29.50	35.25	40.75	42.00	42.00	46.00	55.50	54.50
330	....	....	....	58.00	....	....	68.50	70.00	73.75	77.75
347	24.50	32.25	39.50	45.75	46.50	46.75	51.25	60.75	59.25
403	....	....	27.00	30.75	....	32.00	34.25	44.00	41.25
405	16.50	21.75	25.25	29.25	30.50	30.25	31.75	42.50	39.75
410	14.00	18.25	24.00	27.75	26.25	28.75	30.00	40.75	34.25
416	....	....	....	24.50	28.25	....	29.25	30.50	41.25	41.25
420	22.00	28.50	29.25	34.00	35.50	35.00	38.50	49.25	52.75
430	14.25	18.50	24.50	28.25	27.00	29.25	30.50	43.50	34.75
430F	....	18.75	25.00	28.75	....	29.75	31.00	44.00	44.00
431	14.50	28.50	25.00	28.25	27.50	29.25	30.50	44.00	35.25
440A,B,C	....	28.50	29.25	34.00	....	35.00	38.50	49.25	52.75
442	....	....	....	28.00	....	....	30.50	35.25	48.25	47.75
446	....	....	....	33.75	38.25	53.00	39.50	40.75	59.75	71.00
501	....	....	....	14.00	14.50	21.25	16.00	18.25	30.50	29.00
502	....	....	....	15.25	16.00	22.25	17.00	20.00	31.75	30.00

Stainless Steel Producers Are: Allegheny Ludlum Steel Corp.; American Steel & Wire Division, U. S. Steel Corp.; Armco Steel Corp.; J. Bishop & Co.; G. O. Carlson Inc.; Carpenter Steel Co.; Charter Wire Products Co.; Cold Metal Products Co.; Crucible Steel Co. of America; Damascus Tube Co.; Wilbur D. Driver Co.; Driver-Harris Co.; Eastern Stainless Steel Co.; Firth Sterling Inc.; Ft. Wayne Metals Inc.; Helical Tube Co.; Indiana Steel & Wire Co.; Ingersoll Steel Division, Borg Warner Corp.; Jessop Steel Co.; Joslyn Mfg. & Supply Co.; Kenmore Metals Corp.; Maryland Fine & Specialty Wire Co.; McLouth Steel Corp.; Metal Forming Corp.; Page Steel & Wire Division, American Chain & Cable Co. Inc.; Republic Steel Corp.; Rome Mfg. Co.; Sharon Steel Corp.; Simonds Saw & Steel Co.; Specialty Wire Co. Inc.; Stainless Welded Products Inc.; Superior Steel Corp.; Timken Roller Bearing Co.; Tube Methods Inc.; United States Steel Corp.; Universal-Cyclops Steel Co.; Wallingford Steel Co.; Washington Steel Corp.

CLAD STEEL

Cladding Stainless	Plates: Carbon Base 10%	Plates: Carbon Base 20%	Sheets: Carbon Base 20%	Sheets: Copper Base Both Sides
302	....	31.00	31.00	77.00
304	27.60	32.50-32.70	32.50	77.00
310	36.50	41.00	.....	144.00
316	32.60	37.70-42.75	42.75	....
318	37.00	42.20	.....	....
321	29.30	34.40-37.00	37.00	111.00
347	30.40	35.50-40.50	40.50	130.00
405	23.40	30.60	.....	....
410	22.90	30.10	.....	....
430	22.90	30.10	.....	....
Inconel	41.23	54.18	.....	165.00
Nickel	37.50	50.90	.....	....
Monel	38.90	51.80	.....	....
Copper*	....	.....	46.00	....

	Strip, Carbon Base: Cold-Rolled 10%	Cold-Rolled Both Sides	Hot-Rolled 10%	Hot-Rolled Both Sides
Copper*	27.85	35.85	24.00	32.25

* Deoxidized. Production points: Stainless sheets, New Castle, Ind. I-4; stainless-clad plates, Claymont Del. C22 Coatesville, Pa. L7, New Castle, Ind. I-4 and Washington, Pa. J3; nickel, inconel, monel-clad plates Coatesville L7; copper-clad strip, Carnegie, Pa. S18. Production point for copper-base sheets is Carnegie, Pa. A13.

TOOL STEEL

Grade	$ per lb	Grade	$ per lb
Regular Carbon	0.25-.285	5% Cr Hot Work	0.39
Extra Carbon	0.33-.340	W-Cr Hot Work	0.41
Special Carbon	0.35-.360	V-Cr Hot Work	0.43
Oil Hardening	0.370-.39	Hi-Carbon-Cr.	0.665-.70

Grade by Analysis (%) W	Cr	V	Co	Mo	$ per lb
20.25	4.25	1.6	12.25	...	4.055
18.25	4.25	1	4.75	...	2.340
18	4	2	9	...	2.565-2.695
18	4	2	...	...	1.820
18	4	1	...	...	1.580-1.660
13.5	4	3	...	...	1.875
6.4	4.5	1.9	...	5	1.065
6	4	3	...	6	1.300
2	1.4	1.2	...	...	0.495
1.5	4	1	...	8.5	0.895

Tool steel producers include: A4, A5, B2, B5, C4, C9, C13, C18, D4, F2, J3, L3, M14, S8, U4, V2 and V3.

PIG IRON, Gross Ton

F.o.b. furnace prices as reported to STEEL. Minimum delivered prices are approximate and do not include 3% federal tax. Key to producing companies on page 121.

	Basic	No. 2 Foundry	Malleable	Bessemer
Bethlehem,Pa. B2	$58.00	$58.50	$59.00	$59.50
New York, del.	....	62.28	62.78	....
Newark, del.	61.02	61.52	62.02	62.52
Philadelphia, del.	60.75	61.25	61.75	62.25
Birmingham District				
AlabamaCity,Ala. R2	52.38	52.88	....	....
Birmingham R2	52.38	52.88	....	....
Birmingham U6	....	52.88	....	....
Woodward,Ala. W15	52.38	52.88	....	....
Cincinnati, del.	....	60.43	....	....
Buffalo District				
Buffalo R2, H1	56.00	56.50	57.00	....
Tonawanda,N.Y. W12	56.00	56.50	57.00	....
No. Tonawanda,N.Y. T9	....	56.50	57.00	....
Boston, del.	66.65	67.15	67.65	....
Rochester,N.Y., del.	59.02	59.52	60.02	....
Syracuse,N.Y., del.	60.12	60.62	61.12	....
Chicago District				
Chicago I-3	56.00	56.50	56.50	57.00
Gary,Ind. U5	56.00	....	56.50	....
IndianaHarbor,Ind. I-2	56.00	....	56.50	....
So.Chicago,Ill. W14, Y1	56.00	56.50	56.50	....
So.Chicago,Ill. U5	56.00	....	56.50	57.00
Milwaukee, del.	58.17	58.67	58.67	59.17
Muskegon,Mich., del.	....	62.80	62.80	....
Cleveland District				
Cleveland A7	56.00	56.50	56.50	57.00
Cleveland R2	56.00	56.50	56.50	....
Akron,O., del. from Cleve.	58.75	59.25	59.25	59.75
Lorain,O. N3	56.00	....	....	57.00
Pittsburgh District				
NevilleIsland,Pa. P6	56.00	56.50	56.50	....
Pitts.,N.&S. sides, Ambridge, Aliquippa, del.	57.37	57.87	57.87	....
McKeesRocks, del.	57.04	57.54	57.54	....
Lawrenceville, Homestead, Wilmerding, Monaca, del.	57.66	58.16	58.16	....
Verona, Trafford, del.	58.19	58.69	58.69	....
Brackenridge, del.	58.45	58.95	58.95	....
Bessemer,Pa. U5	56.00	....	56.50	57.00
Clairton,Rankin,So.Duquesne,Pa. U5	56.00	....	....	....
McKeesport,Pa. N3	56.00	....	....	57.00
Midland,Pa. C18	56.00	....	....	....
Monessen,Pa. P7	56.00	....	....	....
Youngstown District				
Hubbard,O. Y1	....	....	56.50	....
Youngstown Y1	....	....	56.50	57.00
Youngstown U5	56.00	....	....	57.00
Mansfield,O., del.	60.90	....	61.40	61.90
Duluth I-3	56.00	56.50	56.50	57.00
Erie,Pa. I-3	56.00	56.50	56.50	57.00
Everett,Mass. E1	....	63.25	63.75	....
Fontana,Calif. K1	62.00	62.50	....	....
Geneva,Utah C11	57.50	58.00	....	....
GraniteCity,Ill. G4	57.90	58.40	58.90	....
Ironton,Utah C11	56.00	56.50	....	....
LoneStar,Texas L6	52.00	52.50*	52.50	....
Minnequa,Colo. C10	58.00	59.00	59.00	....
Rockwood,Tenn. T3	....	....	58.50	....
Sharpsville,Pa. S6	56.00	56.50	56.50	57.00
Steelton,Pa. B2	58.00	58.50	59.00	59.50
Swedeland,Pa. A3	60.00	60.50	61.00	61.50
Toledo,O. I-3	56.00	56.50	56.50	57.00
Cincinnati, del.	61.76	62.26	....	....
Troy,N.Y. R2	58.00	58.50	59.00	....

*Low phos. southern grade.

PIG IRON DIFFERENTIALS

Silicon: Add 50 cents per ton for each 0.25% Si or percentage thereof over base grade, 1.75-2.25%, except on low phos iron on which base is 1.75-2.00%.

Phosphorus: Deduct 38 cents per ton for P content of 0.70% and over.

Manganese: Add 50 cents per ton for each 0.50% manganese over 1% or portion thereof.

Nickel: Under 0.50% no extra; 0.50-0.74%, incl., add $2 per ton and each additional 0.25%, add $1 per ton.

BLAST FURNACE SILVERY PIG IRON, Gross Ton

(Base 6.0-6.50% silicon; add $1.50 for each 0.5% Si; 75 cents for each 0.5% Mn over 1%)

Jackson,O. G2, J1	$67.00
Buffalo H1	68.25

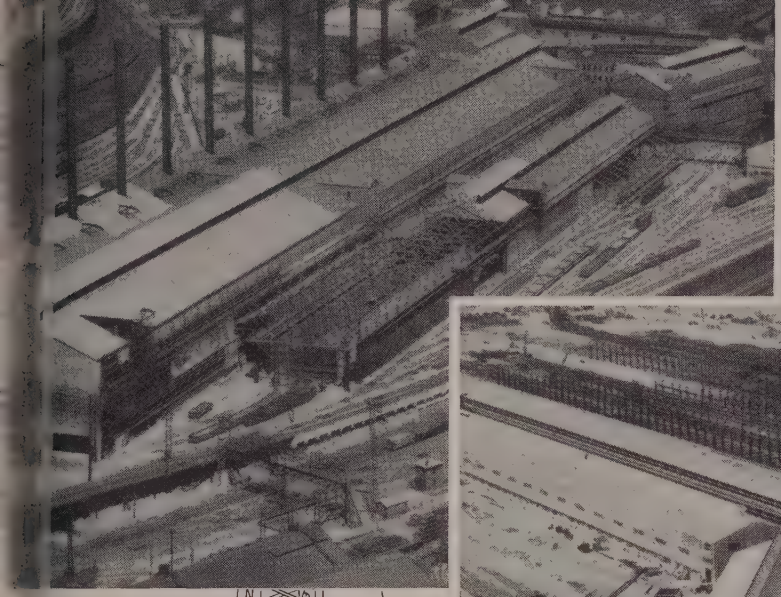
ELECTRIC FURNACE SILVERY PIG IRON, Gross Ton

(Base 14.01-14.50% silicon; add $1 for each 0.5% Si to 18%; $1.45 for each 0.5% Mn over 1%; $2 per gross ton premium for 0.045% max P)

NiagaraFalls,N.Y. P15	$91.00
Keokuk,Iowa, Openhearth & Fdry, freight allowed K2	95.50
Keokuk, OH & Fdry, 12½ lb piglets, 16% Si, frt. allowed K2	98.50
Wenatchee,Wash., OH & Fdry, freight allowed K2	95.50

LOW PHOSPHORUS PIG IRON, Gross Ton

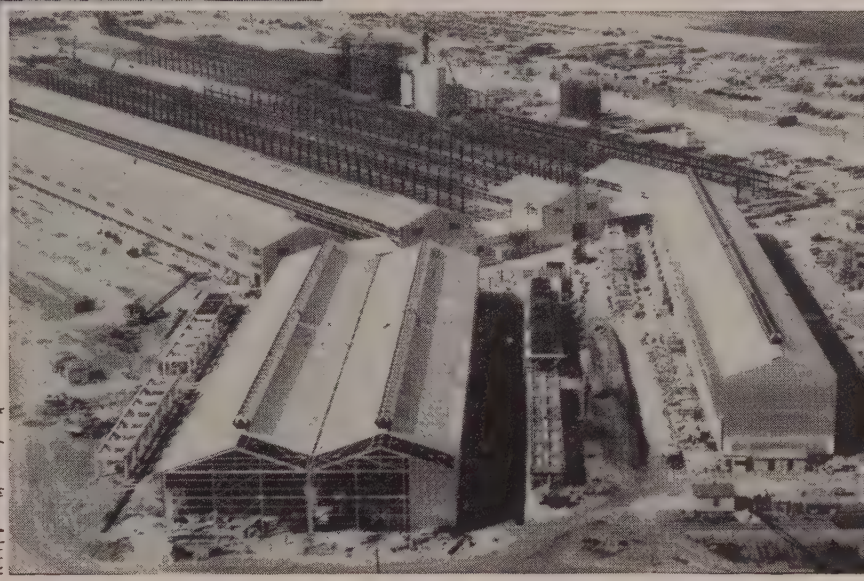
Cleveland, intermediate, A7	$61.00
Rockwood,Tenn. T3	68.50
Steelton,Pa. B2	64.00
Philadelphia, delivered	67.55
Troy,N.Y. R2	64.00

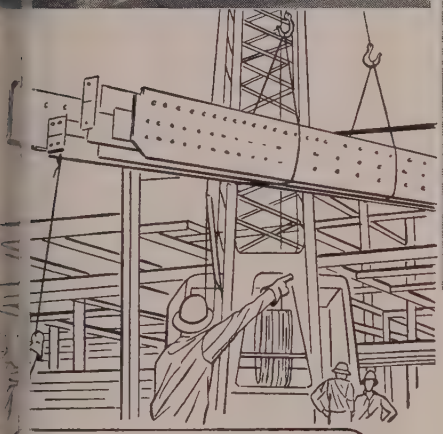


JONES & LAUGHLIN STEEL CORPORATION'S multi-million dollar expansion project on Pittsburgh's South Side.

• • •

REYNOLDS METALS COMPANY, San Patricio Plant, Corpus Christi, Texas, for increased production of aluminum.





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- **REPUBLIC STEEL CORPORATION**
  Cleveland, Ohio
- **UNITED STATES STEEL CORPORATION**
  Fairless Works
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UNITED STATES STEEL EXPORT COMPANY, NEW YORK

AMERICAN BRIDGE

USS TRADE MARK

UNITED STATES STEEL

WAREHOUSE STEEL PRODUCTS

(Representative prices, cents per pound, subject to extras, f.o.b. warehouse. City delivery charges are 20 cents per 100 lb except: New York, 30 cents; Philadelphia, 25 cents; Birmingham, Cincinnati, San Francisco, St. Paul, 15 cents.)

	SHEETS			STRIP		BARS			Standard Structural Shapes	PLATES	
	Hot Rolled	Cold Rolled	Gal. 10 Ga.†	H.R.*	C.R.*	H.R. Rds.	C.F. Rds.‡	H.R. Alloy 4140††[5]		Carbon	Floor
Baltimore	6.20	7.64	7.81	7.00	...	6.86	8.17[6]	12.04	6.98	6.85	7.98
Boston	6.89	7.83	9.23	7.13	...	6.87	8.35	12.28	7.06	7.13	8.26
Buffalo	6.18	7.15	9.01	6.79	...	6.35	7.70	12.17	6.59	6.68	7.88
Birmingham ...	6.10	7.00	8.00[2]	6.30	...	6.15	8.90	....	6.35	6.35	8.65
Charlotte, N. C.	6.95	7.80	8.69	6.90	...	7.10	8.37	....	7.10	7.10	8.37
Chicago	6.18	7.12	8.05	6.42	...	6.28	7.30	11.75	6.46	6.33	7.46
Cincinnati	6.51	7.19	8.47	6.72	...	6.58	7.66	12.17	6.93	6.85	7.88
Cleveland	6.18	7.12	7.90	6.58	...	6.34	7.65	11.89	6.79	6.50	7.79
Detroit	6.45	7.32	8.34	6.71	...	6.57	7.60	11.92	6.93	6.85	7.80
Houston	7.15	7.85	9.32	7.45	...	7.45	...	....	7.35	7.20	8.55
JerseyCity,N.J..	6.54	7.45	8.72	6.82	...	6.75	8.43[6]	11.84	6.50	6.67	8.01
Los Angeles ...	7.25	9.00	9.35	7.55	11.20	7.15	9.10	13.05	7.35	7.20	9.25
Milwaukee	6.35	7.29	8.22	6.59	...	6.45	7.57	11.92	6.63	6.50	7.63
Moline, Ill.	6.53	7.47	8.40	6.77	...	6.63	7.65	....	6.81	6.68	...
New York	6.54	7.45	8.72	6.82	...	6.75	8.43[6]	11.84	6.50	6.67	8.01
Newark, N. J..	6.78	7.75	9.02	7.16	...	7.06	8.43[6]	....	6.90	6.99	8.30
Norfolk, Va. ..	6.90	...	...	7.20	...	7.20	8.50	....	7.20	7.15	7.85
Philadelphia ...	6.53	7.55	8.35	7.02	8.80	6.87	8.19[6]	11.89	6.67	6.63	7.65
Pittsburgh	6.18	7.12	8.30	6.55	...	6.28	7.65	11.89	6.46	6.33	7.46
Portland, Oreg..	7.90	9.30	10.00	7.90	...	7.60	10.90	....	7.50	7.55	9.40
Richmond, Va. .	6.50	7.45	8.00	7.10	...	7.05	7.95	....	7.10	6.85	8.10
St. Louis	6.48	7.42	8.35	6.72	...	6.58	7.70	12.05	6.86	6.73	7.86
St. Paul	6.84	7.78	8.71	7.08	...	6.94	8.06	....	7.12	6.99	8.12
San Francisco..	7.35	8.70	10.15	7.60	...	7.15	9.75	13.05	7.25	7.20	9.25
Seattle	8.15	8.70	10.10	8.02	...	7.58	10.13	13.50	7.50	7.59	9.40
Spokane	8.15	9.25[7]	10.10	8.50	...	7.60	11.00[8]	14.15	7.25	7.35	9.80
Washington	6.71	8.15	8.35	7.51	...	7.37	8.43	....	7.49	7.36	8.49

*Prices do not include gage extras; † prices include gage and coating extras, except Birmingham (coating extra excluded) and Los Angeles (gage extra excluded); ‡ includes 35-cent special bar quality extra; § as rolled; †† as annealed; ** ⅛" and heavier, 8.09c for No. 12 and lighter. Base quantities, 2000 to 9999 lb except as noted. Cold-rolled strip, 2000 lb and over; Cold-finished bars, 2000 lb and over; [2]—500 to 9999 lb; [6]—1000 to 1999 lb; [6]—1000 lb and over; [7]—1500 lb to 3499; [8]—under ½ in.

Warehouse Steel Demand Well Sustained

Consumers continue to seek substantial tonnages of products still in tight supply, including strip, large size bars and heavy plates

New York—Distributors' alloy steel inventories are in balance with broader range of specifications available; demand is off slightly as is the case with carbon grades, although consumers are showing more interest as they resume after summer suspensions. Carbon steel stocks also are building up with inventories getting in balance with demand; still short are wide-flanged beams, heavy flats and larger rounds. Warehouses look for bonus tonnages in cold-rolled sheets emanating from lower automotive requirements. Production of the Fairless sheet mill also is having impact on carbon sheet supply, although lighter gages of hot-rolled are still limited. Range of sizes and gages are steadily expanding at Fairless, notably in October schedules.

Philadelphia—August may be the slowest month this year for distributors; if so, it will be more or less in line with the normal trend in warehouse business. Movement for the month usually dips below that for July, which bears the first shock of the vacation and hot weather season. Distributors, however, regard present business as good under the circumstances and take further comfort in the fact that they are steadily building up inventories on a more balanced basis. What they would like to have a lot more of, though, are wide-flange beams, hot and cold-rolled sheets, and heavy plates. They could also use more hot carbon bars in the popular sizes, and less alloy bars, both hot and cold.

Boston—Except for heavy plates and wide-flanged beams, warehouse stocks are steadily getting into balance. Distributors report slow demand for alloys. For the first time in months, warehouse buying is now on a specification basis. In other words, distributors place orders for what they need rather than for what they can get.

Chicago—Warehouses in this area are picking up no inventory except in certain products—the already easy ones like hot and cold-rolled strip, small bars, alloys, etc. Even galvanized sheets are fairly easy again. Over-all, however, inventory gain isn't possible with consumers seeking generous quantities of the tight products which include hot and cold-rolled strip, large bars, structurals and plates. Activity has been picking up noticeably with reopening of many manufacturing plants following normal summer vacation closings.

Los Angeles — Distributors' bookings are just about at the June-July level, or slightly lower. Purchases of warehouse steel by aircraft fabricators, due to schedule stretchouts and contract cancellations, are smaller than they were 30 to 60 days ago. Distributors' inventories are rising due to improved mill deliveries.

San Francisco — Plates and hot and cold-rolled sheets are prominent among the items still scarce at the warehouse level. One house, specializing in plates, has not been able to get replenishments because of the present oversold condition of the mill supplier. Aside from those products, supplies generally are in pretty good condition and distributors still are enjoying a healthy volume.

Seattle—The warehouse trade reports increased competition. Inventories continue unbalanced. Business runs in streaks. Plates, cold and hot-rolled sheets are in short supply, plates particularly. Galvanized sheets, the demand for which dropped earlier in the year, are available and well stocked. The price situation seems stabilized. Buyers appear more choosy and are giving closer attention to prices. Coast mills are said to be looking for small bar business, 12 inch and under, the 22 mill sections being busy. Wide flange sections are very tight. One distributing house reports it is buying only for needs of the near future, and in standard sizes.

Warehouses, Users Expect Break in Stainless

Distributors and consumers are cutting inventories of 400 series. They don't want to be caught with heavy stocks of straight-chromium when controls end

CONTROLS on the end-use of nickel-bearing stainless steel do not end soon, a lot of stainless fabricators are going to be in a sad position. It is on the premise that those controls may be lifted by as early as Sept. 1 that many users and warehouses are cutting inventories of the 400-series stainless steels they have been using in place of the 300 series.

In some cases, stocks are being cut to the dangerous point. One well-known New York warehouse says that even if it means a temporary loss of volume, it is reducing straight-chromium inventories rather than get caught with high inventories of the 400 series when restrictions are lifted on end-use of 18-8 and other nickel-bearing grades.

Well Developed — This warehouse cutting process has been going on for some time—as long as a month or so in some cases. More recently, consumers have been joining the act. One producer of stainless points out that many consumers have been getting along with minimum supplies of straight-chromium stainless for quite a while. Some distributors are even holding up orders of 430 stainless in anticipation of the lifting of controls.

Despite all this, there is no positive indication that Schedule A of M-80 or the order itself will be altered until the first of 1954. But there is a strong feeling within the industry that something is going to break in the nickel situation sooner than that. The Stainless Steel Industry Advisory Committee recommended revocation of the portions of Schedule A restricting the use of stainless, and NPA is now considering a proposal to end all nickel controls by Oct. 1.

Return to the Fold—Most users who were forced to substitute 400-series materials for the nickel-bearing types will go back to the 300 series just as fast as they can. A recent survey showed that between 70 and 80 per cent of stainless consumers will do so. Significant, though, is the fact that a year ago about 95 per cent of the users wanted to go back. In the interlude, many of the problems arising from use of straight-chrome stainless, notably 430, have been ironed out, and it is now acceptable and, in some cases, desirable.

Generally, there are four reasons for the switch back:

1. Cheaper fabrication costs.
2. Extra margin of safety and strength (corrosion resistance).
3. Force of habit.
4. Consumer resistance to substitute materials.

Satisfied Customers—Not all fabricators will make the switch. Biggest consumer last year, the automobile industry, is quite happy with the cheaper 430. It is corrosion-resistant enough, its color matches chrome plating better than nickel-chrome stainless, and motordom engineers have learned how to form it satisfactorily. Another consumer, Dravo Corp., Pittsburgh, says the nickel shortage was an angel in disguise. In their combustion chambers and space heaters, 430 works very well.

Regardless of when the break comes, it will not be a smooth and immediate transition. Replacement of chrome stainless by nickel grades will require several weeks after nickel is freed.

Tubular Goods . . .

Tubular Goods Prices, Page 123

Pittsburgh — Demand continues heavy for seamless and electric weld pipe and tubing. Seamless pipe and tubing between 2 and 24 in. in diameter is tight. Producers' order books are filled through the fourth quarter, and some are already predicting a good first quarter next year.

Demand for buttweld pipe is spotty, but strong over-all. Fourth quarter order books are filling satisfactorily.

St. Louis—Pipe jobbers have the best stocks in years, so caution currently is marking their buying pattern. Mills report some cancellations, most of them being due to building strikes in the southwest. They are still generally 30 days behind in deliveries, however, and are using the cancellations to get current rather than seek new takers.

Seattle—Cast iron pipe agencies report a dull market and little inquiry. Some small lots are being sold out of warehouse. Bids are in for 400 tons at Cottage Grove, Oreg.

Semifinished Steel . . .

Semifinished Prices, Page 120

Los Angeles — Shutdown of one electric furnace for repairs at the local plant reduced the combined operating rate of the three Bethlehem Pacific Coast Steel Corp. plants to 89 per cent of theoretical capacity.

San Francisco—Open-hearth operations of the South San Francisco plant of Bethlehem Pacific Coast Steel Corp. lost a week's production because of a dispute over duties of ten employees. Rolling mill operations were not interrupted as there was an adequate supply of ingots on hand.

Sheets, Strip . . .

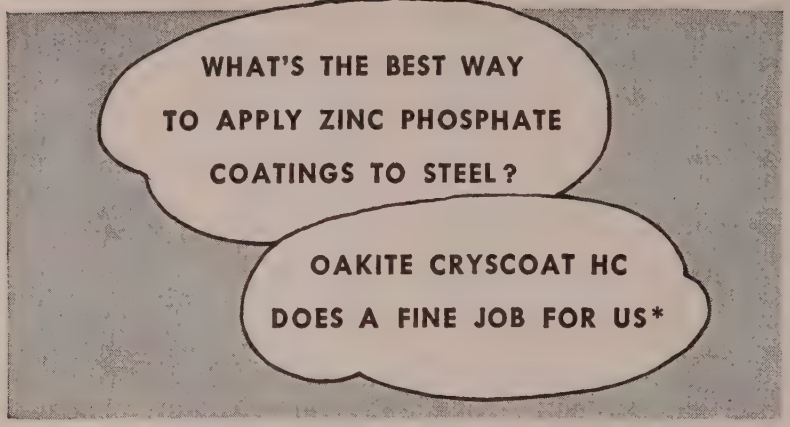
Sheet and Strip Prices, Page 120 & 121

Philadelphia—A few spot mill offerings are developing in hot and cold-rolled sheets and are being snapped up quickly. Whether these, or any one of them, are resulting from cutbacks by General Motors following the fire at its Livonia, Mich., transmission plant is not clear. The trade, though, confidently expects there will be some easing in supply as a result of this disruption not only to General Motors' operations, but to those of some of the independents as well. Another development which may be contributing to sheet "bonuses" is a seasonal cutback in tin mill products, thus permitting some diversion of steel to the straight carbon products. However, the over-all volume of these spot offerings or bonuses is still relatively small, with demand well in excess of supply.

Boston—More carbon sheet tonnage, both hot and cold, is coming out for fourth quarter. Slackening in automotive buying accompanied by some cancellations, larger tonnage coming out of the Fairless mill in a wider range of sizes, and heavier offerings by other producers serving this area point toward competitive distribution in sheets for the first time in three years. Narrow cold strip capacity is sold through this year, unless cancellations develop, and converters are taking full allotments of hot-rolled strip.

Pittsburgh—Producers' sheet steel order books are filled deep into the fourth quarter. Demand from several consumers has fallen off, but they may be awaiting ready availability of sheet before placing orders for some projects. Farm equipment and several independent auto producers have diminished their orders. Several appliancemakers are lowering requests while switching to new models. The complete picture continues to show demand exceeding supply here.

Chicago—A much easier situation



*This comment came from a Pennsylvania munitions maker, who added that Oakite CrysCoat HC has put an excellent zinc phosphate coating on 385,000 shells with "absolutely no trouble... maintenance and control are very easy."

The Oakite CrysCoat HC coating on steel products—such as artillery shells, rocket fins, auto parts, etc.—weighs more than 200 milligrams per square foot. It more than meets the requirements of U.S. Government Specifications:

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PA-PD-191, Rev. A

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2 The heavy coating gives excellent protection against electrochemical corrosion. *See page 7.*

3 The CrysCoat HC Process is easy to control. Only one material is used for make-up and up-keep. No accelerators, starters, toners or other additives are needed. Only one simple type of titration is used. *See page 9.*

4 The CrysCoat HC reaction produces relatively little sludge and scale. *See page 10.*

5 Stainless steel is not necessary for all parts of the equipment. *See page 11.*

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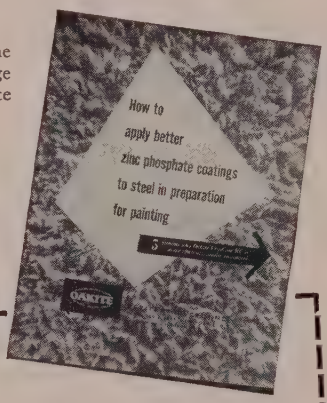

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in sheets—both hot and cold-rolled—are envisioned for fourth quarter as result of the destruction by fire of General Motors Corp.'s automatic transmission plant in Livonia, Mich. Holdbacks in deliveries or cancellation of tonnages by carmakers affected by interruption of the flow of transmissions are deemed certain by sheetmakers to bring about a marked easing. It is pointed out, however, that takers are waiting for any tonnage relinquished.

Los Angeles—About 500 fabricators belonging to the Sheet Metal Contractors Association of Southern California have closed their shops in a dispute with the AFL. With sheetmakers on an "allocation" basis, earliest delivery to fabricators on flat-rolled tonnage is 150 days.

Plates . . .

Plate Prices. Page 120

Boston—While pressure for plates has eased slightly, productive capacity for the balance of this year will be fully engaged. Clad-plate and head deliveries have improved, now averaging eight to ten weeks; five to seven weeks for small and eight to twelve weeks for larger spun and pressed heads. Wide and heavy plates are tight; narrow plates also are tight due to loss of tonnage on strip mills.

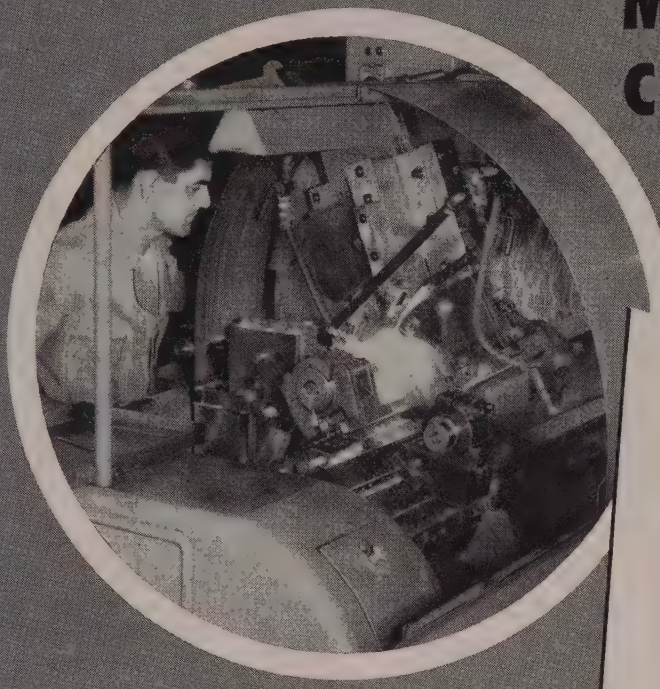
New York—Most plate consumers stand a chance of getting a little more tonnage in the fourth quarter than they are now getting. In the majority of cases, they will not get all the tonnage they want, because in most lines, barring shipwork, there has been no appreciable lag in requirements. Further, supply has been cut by the withdrawal of a substantial amount of strip plate from the market. Most eastern plate makers anticipate high operations throughout the remainder of the year, but believe production will still fall short of demand.

Philadelphia—Most plate producers see enough work ahead to insure active operations over the remainder of the year. Some let-up is noted in a few lines, notably in ship work, and this will enable a little freer disbursement in fourth quarter in others, including tanks and carbuilding. There is still question that supply will be generally adequate even by the close of the next quarter.

Pittsburgh—Plate requirements remain strong. Lighter sizes—½-in. and thinner—are particularly tight. Trends indicate no slackening in demand.

Seattle—Continued plate shortages in this area have stimulated renewed buying of Japanese steel, at least 350

WHAT'S YOUR GUESS ON THIS Machinability Comparison?



ENDURO STAINLESS STEEL BARS ARE —% AS MACHINABLE AS BESSEMER SCREW STOCK

Would You Say

(a) *42%* (b) *67%* (c) *100%*
(d) *33%* (e) *90%*

?

YOU CAN APPLY the high physical and chemical properties of ENDURO Stainless Steel to duplicate parts you're running now —and still get fast automatic production.

Free-Machining ENDURO Bars are cold-finished by Republic's Union Drawn Steel Division especially for that purpose. They provide close tolerances, accuracy of section, uniform soundness, and fine surface finish.

Two grades are fully 90% as machinable as Bessemer screw stock. If 90% was your answer to the question above, you've probably had experience with Free-Machining ENDURO Bars. If you haven't, Republic metallurgists will be glad to give you prompt assistance on applications, processing, and use. Free-Machining ENDURO also is available in hot-rolled bars and in wire. Get more details from your nearest Republic District Sales Office, or write:

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Alloy Steel Division • Massillon, Ohio
GENERAL OFFICES • CLEVELAND 1, OHIO
Export Department: Chrysler Building, New York 17, N.Y.

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METALS

9 to 5 could become 9 to nightmare if business machines were subject to frequent, inconvenient and costly breakdowns. Beryllium copper helps eliminate service failures, keeps customers happy. For parts and key numbers, see below.

BUSINESS MACHINES HAVE THE RIGHT ANSWER

Beryllium copper helps manufacturers solve the problem of conflicting physical requirements

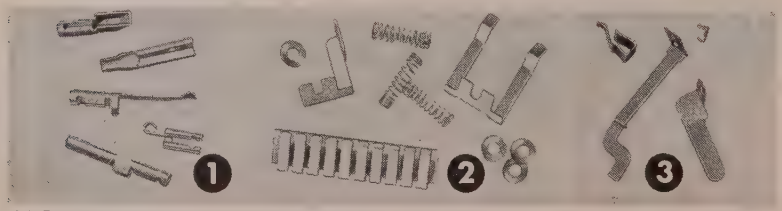
Business machines can sort information, read it, count it, remember it, print it—automatically, reliably, and with little service attention. Remarkable! No more so, however, than the alloy which makes this performance possible—beryllium copper. Here, in one metal, are combined such properties as strength, conductivity, fatigue resistance, elasticity.

Since a designer must often solve conflicting mechanical, electrical and service requirements with one material, it is this versatility of Berylco which makes it so valuable. Take the part at the top in the photograph numbered (1) below—a "shovel" contact in a business machine.

Electrical conductivity here is a must. So is corrosion resistance—to enable the machine to operate in any climate. The contact must be able to withstand severe forming (there's a tolerance plus or minus of 0.001 in. on a diameter of 0.098 in.). The shovel end must have wear resistance to withstand the spring action of the prong that fits against it. The barrel end must have enough elasticity to retain a plug tightly. Finally, the part must not fracture when the ears are bent placing it in the control panel. No other available material but Berylco beryllium copper could meet these requirements.

Fortunately this alloy is again in plentiful supply. For sample material or engineering help, write the world's largest producer of beryllium copper, THE BERYLLIUM CORPORATION, Dept. 3H, Reading 19, Pa.

Tomorrow's products are planned today—with Berylco beryllium copper



(1) Berylco parts in an IBM accounting machine. (2) Calculators solve mechanical, electrical and spring requirements with one material—Berylco. (3) Small parts play big roles in voice recorders.

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tons being consigned to local firms. Landed prices here, including duty, run from 1-cent to 1½-cents per pound higher than domestic. The Geneva mill has been out of the market for some time and buyers do not know when this source of supply will resume. Material from Kaiser's Fontana mill is handicapped by freight rates to the Pacific Northwest. The Japanese steel is classed high quality, report here being that American experts are in charge of Japanese plants. Shipments are covered by inspection certificates.

Refractories . . .

Refractories Prices, Page 141

Cleveland—Basic Refractories Inc., Cleveland, increased its price of dead burned dolomite refractories from $13.75 per net ton in bulk, carload lots, f.o.b. its plants at Narlo and Bettsville, O., to $14.50. The change was effective Aug. 15. This is the company's first increase in price of that product since Dec. 14, 1950.

Wire . . .

Wire Prices, Page 122

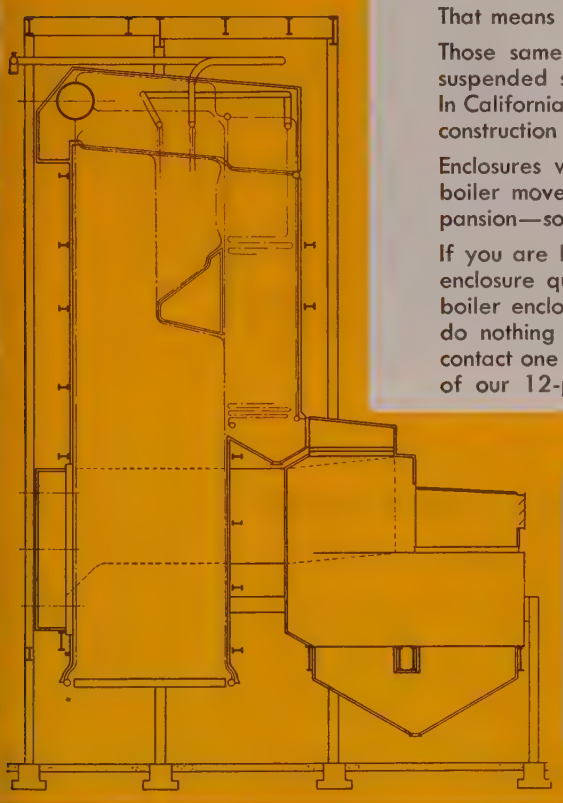
New York—Forward buying of finished wire products is less apparent. This accounts for openings in fourth quarter schedules beyond October on numerous products, both low and high-carbon grades. Rather high consumer inventories, coupled with better mill deliveries, operate toward policy of nearby buying and demand is leveling off on this basis. Another factor is the larger rod tonnage available to nonintegrated mills; the latter are meeting commitments more promptly. There are cancellations and deferments from the automobile industry involving not only valve spring wire but other wire products.

Boston—Numerous wire consumers have not placed October orders, and more openings for that month exist than had been expected. Specifications are subject to revisions, and buying for November-December is slow. Cancellations and deferments continue, but as yet are not too serious. More cautious buying points toward inventory adjustments in upholstery spring and cold-heading wire. Users of these and other more standard products are getting their stocks down to about a 60-day level.

St. Louis—Wire demand for the first time since the war is showing faint signs of weakening in the district. Bed manufacturing and a few other household lines are not urging wire deliveries as insistently as before. Wire for building uses is holding up well, however. Third-quarter capacity is filled and some fourth-quarter orders are in.

BOILERS

10 STORIES HIGH!



Three new B-I-G boilers on the West Coast will have all of the cost-saving advantages of B-L tube-supported wall enclosures and Texad* finishes. The order for one of them—a 1,250,000-pound-per-hour unit—has just been placed. Construction on the others—850,000-pound-per-hour boilers is now being started.

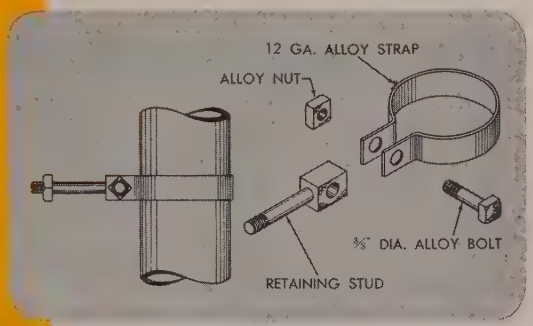
That means they'll cost less, save steel, operate more efficiently.

Those same advantages can be earned by specifying Bigelow-Liptak suspended settings for any large size industrial or public utility boiler. In California, for example, the king-sized, 10-story boilers will have lower construction and material costs and will not need tough-to-get steel plate.

Enclosures will be tighter, too. Tube-supported walls breathe with the boiler movements and TEXAD* flexes itself right along with boiler expansion—something that a steel plate casing that large could never do.

If you are building a large boiler, or a small one, insist on a separate enclosure quotation. You'll save plenty and you'll get a specially-made boiler enclosure engineered for your particular furnace by people who do nothing else but build furnace enclosures. Write Detroit today, or contact one of our conveniently-located offices. Be sure to ask for a copy of our 12-page tube-supported wall catalog—and a TEXAD* folder.

*T. M. REG.



One method B-L uses to fasten the enclosure to the tubes without welding into the tube. Tile-supporting castings are hung on the studs.

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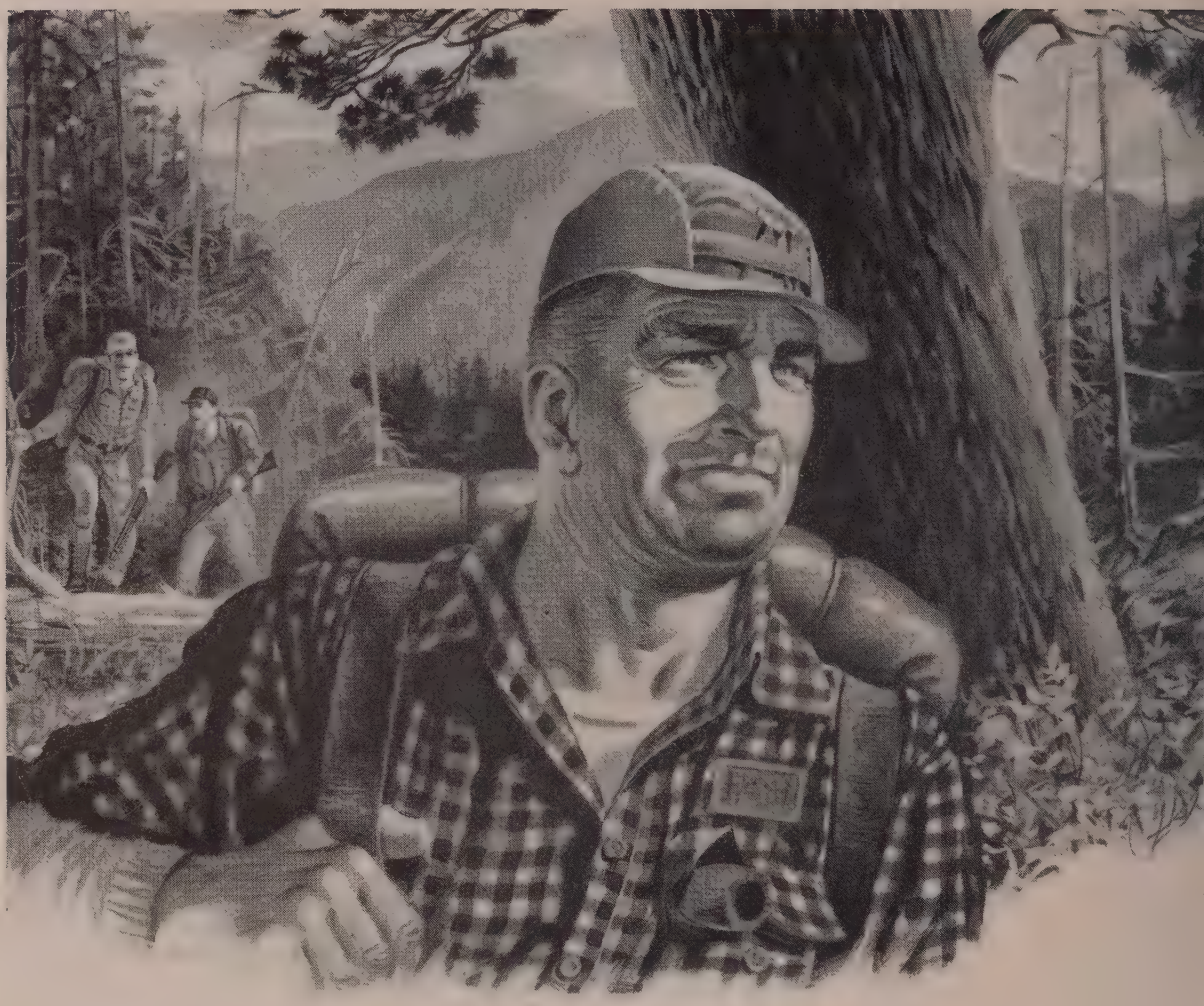

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Steel Bars . . .

Bar Prices, Page 120

Pittsburgh — Jones & Laughlin Steel Corp. issued a new extra book on hot-rolled carbon steel bars and small shapes Aug. 14. It supersedes the list dated May 26, 1953.

The new list reduces the size range of square edge flat bars (near squares), the greatest width now being 2 15/16 in., compared with the former 4 1/16 in. New sections are inserted to cover extras where carbon and manganese ranges are specified but where phosphorous, sulphur and silicon are not. Other restricted chemical composition extras are shown in a new table also. There are minor revisions affecting color marking, heat numbers, bundling and boxing.

Pittsburgh—Demand for merchant bars is expected to be down slightly in the fourth quarter, but high quality bar demand remains strong. Bars in the range of 1½-in and over are tight. Shell components are in this range.

In cold-finished bars, those below 1-in. are in good supply. Those between 1 in. and 3 in. are nearly in balance, while 3 to 6-in. bars are still hard to obtain.

Boston—Most producers of hot-rolled carbon bars have filled their order books through fourth quarter. This is not true of their alloy or cold-finished bar schedules, although alloys are booked into November. Converters are taking hot-rolled allotments, but are somewhat slow to order against quotas since they are uncertain as to demand for cold-finished bars. Some are accumulating stocks. Order backlogs are not heavy.

New York—Stringency in hot carbon bars is being relieved here to some extent by importations from Europe. However, hot bar supply is still far short of immediate needs; it is questionable whether there will be any real balance before the end of this year. In any event, hot bar producers anticipate good operations throughout the remainder of 1953.

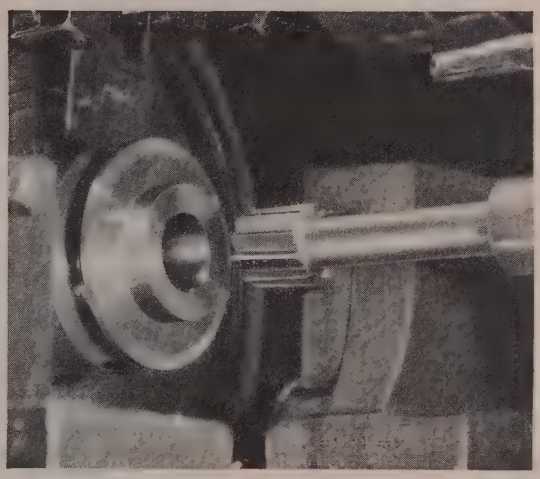
Philadelphia — Despite present shortage of hot carbon bars, some signs of caution among buyers are developing.

Certain jobbers, for instance, have advised mills not to push ahead monthly tonnages in the fourth quarter, but to stick closely to prearranged schedules. These buyers realize that most mills are still behind on general commitments, but apparently are protecting themselves against the chance that later in the year there may be a sudden easing in supply with a resultant flurry of

(*Please Turn to Page* 136)

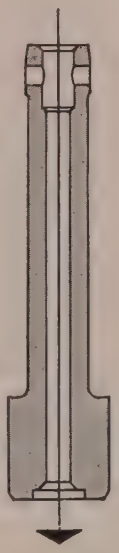
REAM FINE FINISHES

ON SCREW MACHINES AND TURRET LATHES



20-25 Micro-inch Finish

Reamed finishes never considered possible are now obtained on regular production runs with Barber-Colman Oil-Feed Reamers. On this job, 1000 pieces were reamed to a surface finish of 20-25 micro-inches before it was necessary to sharpen the reamer. Feed used is 1.75″ per minute at 280 rpm., requiring 30 seconds to ream the ⅞″ length of cut in AISI C1137 steel.



Oil-feed

An outstanding feature of these reamers is that oil feeds through the body of the tool to flush away chips from the cutting area. Other types of reamers tend to pack chips in front of the reamer, increasing the chance for "pick up" which often ruins finish and shortens tool life. As oil hits the end of the hole, it is forced back between the flutes carrying chips with it. Another aid to extending tool life is that oil reaches the cutting area on jobs which could not otherwise effectively employ a free flow of coolant.

Irregular flute spacing, cam-controlled sharpening, sharp cutting edges—these are exclusive features on all Barber-Colman Reamers to give you smooth cutting, fine finishes, precision hole accuracy and high rates of production. Consult Barber-Colman engineers on your Hole Finishing Problems.

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Grinding Machines
Honing and Lapping Machines
Polishing and Buffing Machines
Lathes
Milling Machines
Planers
Shapers and Slotters
Cutting, Sawing and Filing Machines
Tapping and Threading Machines

Other Machine Tools

More than 20,000 individual machine tool entries (by type, size and manufacturer) will appear in this section.

8 SPECIAL TREND REPORTS based on data received from 2,000 machine tool users will help solve your production problems . . .

1. **Production Methods**
. . . will report trends in relative position of machining to stamping, cold extruding, forging, powder metal forming, production welding, shell molding, die casting, etc.

2. **Machining Methods**
. . . will give a graphic picture of the trends and growth in use of turning, milling, grinding, boring and drilling, etc.

3. **Tooling**
. . . will focus attention on trends toward superspeed turning, milling and broaching, use of carbide tooling, high speed tooling, negative rake machining, contour machining, automatic gauging.

4. **Machine Tools**
. . . will report trend toward use of special machines, standard machine with special tooling, more automation or work transfer and handling devices.

5. **Machine Tool Features**
. . . will report preferences of users for such design features as types of bases, mounting ways, controls, feeds, drives, tracer control motors, checks, chip handling systems, lube systems, etc.

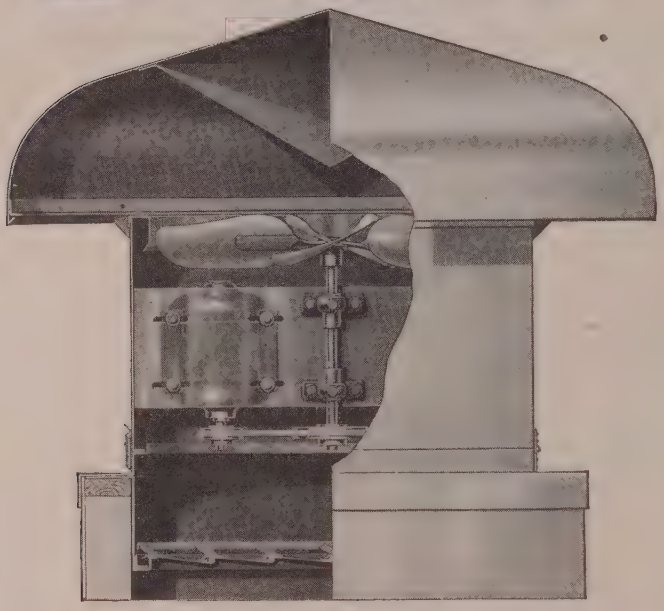
6. **Machining Capacity**
. . . anticipated capacity expansion in 1954 and by 1960 will be measured and reported in relation to 1953 capacity.

7. **Equipment Replacement**
. . . will report on equipment replacement formulas and how to use them, successful replacement programs now in use, who is in charge, what amortization period is most satisfactory, trends in machine tool rentals.

8. **Machine Tool Purchases**
. . . will report on the kind of machines now in use by metalworking plants doing production machining, those they expect to buy, who decides on purchases, how many machines are currently owned.

Advertising Space reservations for this issue must be in by September 8th.

GET ALL THE FACTS ABOUT THE HIGHLY EFFICIENT BURT "LOW TYPE" FAN VENTILATOR



Since its announcement a few years ago, the Burt "Low Type" has become one of the most popular ventilators for industrial and commercial use. The result of half a century of ventilating know-how, its features include:

MODERN ENGINEERING DESIGN

Burt Engineers have combined high capacity, positive weather-proofing and high efficiency with economical operation.

INCONSPICUOUS IN USE

Its low height and modern functional outline meet architectural and building management requirements for inconspicuous appearance.

EASILY INSTALLED AND SERVICED

Airshaft base is designed to fit over a standard square curb with ample overhang for flashing. All internal parts are easily accessible for maintenance.

VERSATILE

Operates with equal efficiency as an exhaust fan ventilator or as a fresh air supply unit—on direct or belt drive.

WIDE RANGE OF SIZES

Available with fans from 12″ to 60″ in diameter—from 1/20 H. P. to 7½ H. P.

SEE SWEET'S OR WRITE FOR BULLETIN SPV-16

FAN & GRAVITY VENTILATORS • LOUVERS • SHEET-METAL SPECIALTIES

The Burt Manufacturing Company

Steel Bars . . .

(*Concluded from Page* 133)

shipments to the warehouses in earlier and larger volume than they care to handle. If these shipments were to be on a highly selective basis, that might be one thing, but usually they are not and include various sizes and types in which jobbers may be well supplied.

Possibility of a stretch-out in shell work before the year end and cutbacks from the auto industry as a direct result of the General Motors fire at Livonia, Mich., if for no other reason, are causing buyers to move a little more slowly than otherwise on future commitments. For a long time past hot-carbon bar producers have had only to open books for a quarter to be completely sold out for the period shortly thereafter. This time there is not the rush to get on mill books—at least, in a number of instances. Buyers generally would like to have more tonnage at this time than they have on hand, but a number are less concerned about the future.

Cincinnati — A buyer can obtain most of the alloy bars he needs here. Carbon bars are in ample supply except for flats. Customers have become more particular as to quality and price, indicating their needs are not pressing.

Chicago — Barmakers believe that large diameter bars, including both hot and cold-finished, are just about over the hump insofar as shortage is concerned. There has been some shrinkage in consumption from heavy industry and this, coupled with cutbacks and stretch-outs in the military shell programs, appears to be turning the trick. More improvement is expected in the next month or so. Small sized bars are no problem now.

St. Louis—Merchant bar bookings reflect a moderating mood in forward buying. Books for the last quarter have been opened, but are not completely sold. Customers, contrary to previous years, are in no hurry to order December needs in August.

Los Angeles—Eastern bar-mills are 3 to 4 weeks behind on delivery promises; Western barmakers, 1 week. Cold-drawers say demand has lightened over the whole product range; least in middle and larger sizes, most in sizes under 9/16-in.

Tin Plate . . .

Tin Plate Prices, Page 122

Pittsburgh — The fourth quarter will see declining orders from tin plate users, as food canning declines.

(*Please Turn to Page* 143)

How to Fabricate More Profits

From 50% rejects to 1%
10c saved per piece
15% to 20% savings
40% rejects before—now 1%
8c to 10c saved per piece
From 20% rejects to none

This is a story of small change that put folding money in the pockets of a half-dozen fabricators of metal products.

The small change is that of specifying Carpenter Stainless Tubing rather than just "stainless tubing" . . . the folding money is attested by the captions under the pictures at the left.

What is more important to you, however, is the fact that none of the orders were for "specials" . . . all of these pieces were made from "mill run" tubing as delivered by Carpenter.

The moral of the story is, of course, that there *is* a difference in Stainless Tubing—and Carpenter makes it. Why not make the most of this *provable* difference in your own shop—for your own profit. Call your nearest Carpenter Distributor for your next order of tubing . . . plus design and engineering help if you need it. "One Call Does It All."

The Carpenter Steel Company, Alloy Tube Division, Union, N.J.
Export Dept.: The Carpenter Steel Co., Port Washington, N.Y.
"CARSTEELCO"

Carpenter

more than corrosion resistance

STAINLESS TUBING & PIPE

← Analysis → ← Tolerance → ← Finish →

- guaranteed on every shipment

CURRENT FERROALLOY QUOTATIONS

Prices as reported to STEEL

MANGANESE ALLOYS

Spiegeleisen: (19-31% Mn, 1-3% Si). Carlot per gross ton $86, Palmerton, Pa.; $85, Pittsburgh and Chicago; (16% to 19% Mn) $84 per ton, Chicago, Pittsburgh, Palmerton, Pa.

Standard Ferromanganese: (Mn 74-76%, C 7% approx.) Base price per net ton $200, Etna, Johnstown and Sheridan, Pa.; add or subtract $2.00 for each 1% or fraction thereof of contained manganese over 76% or under 74%, respectively.
(Mn 76-80%) 13.15c per pound of contained Mn, f.o.b. Alloy, W. Va.; Ashtabula, Marietta, O.; Sheffield, Ala.; and Portland, Oreg.
(Mn 79-81%) Lump, $208 per net ton, f.o.b. Anaconda or Great Falls, Mont. Add $2.60 for each 1% above 81%; subtract $2.60 for each 1% below 79%, fractions in proportion to nearest 0.1%.

Low-Carbon Ferromanganese, Regular Grade: (Mn 85-90%). Carload, lump, bulk, max. 0.07% C, 27.95c per lb of contained Mn, carload packed 28.7c, ton lots 29.8c, less ton 31.0c. Delivered. Deduct 0.5c for max, 0.15% C grade from above prices, 1c for max, 0.30% C, 1.5c for max 0.50% C, and 4.5c for max 75% C—max 7% Si. **Special Grade:** (Mn 90% min, C 0.07% max, P 0.06% max). Add 2.05c to the above prices. Spot, add 0.25c.

Medium-Carbon Ferromanganese: (Mn 80-85, C 1.5% max). Carload, lump, bulk 21.35c per lb of contained Mn, carload packed 22.1c, ton lot 23.2c, less ton 24.4c. Delivered. Spot, add 0.25c.

Manganese metal, 2" x D (Mn 95.5% min, Fe 2% max, Si 1% max. C 0.2% max): Carload, lump, bulk, 36.2c per lb of metal; packed, 36.95c; ton lot 38.45c; less ton lots 40.45c. Delivered. Spot, add 2c.

Electromanganese: Carload, 31.5c; ton lots 33.5c; 250 to 1999 lb, 35.5c. Premium for hydrogen-removed metal, 1.5c per pound, f.o.b. cars Knoxville, Tenn. Freight allowed to St. Louis or to any point east of Mississippi.

Silicomanganese: (Mn 65-68%). Contract, lump, bulk, 1.50% C grade, 18-20% Si, 11.4c per lb of alloy, carload packed, 12.15c, ton lots 13.05c, less ton 14.05c. Freight allowed. For 2% C grade, Si 15-17%, deduct 0.2c from above prices. For 3% C grade, Si 12-14.5%, deduct 0.5c from above prices. Spot, add 0.25c.

TITANIUM ALLOYS

Ferrotitanium, Low-Carbon: (Ti 20-25%, Al 3.5% max. Si 4% max, C 0.10% max). Contract, ton lots 2" x D, $1.50 per lb of contained Ti; less ton $1.55. (Ti 38-43%, Al 8% max, Si 4% max, C 0.10% max). Ton lots $1.35, less ton $1.37, f.o.b. Niagara Falls, N. Y., freight allowed to St. Louis. Spot add 5c.

Ferrotitanium, High-Carbon: (Ti 15-18%, C 6-8%). Contract $177 per net ton, f.o.b. Niagara Falls, N. Y., freight allowed to destinations east of Mississippi river and north of Baltimore and St. Louis.

Ferrotitanium, Medium-Carbon: (Ti 17-21%, C 2-4.5%.) Contract $195 per ton, f.o.b. Niagara Falls, N. Y., freight not exceeding St. Louis rate allowed.

CHROMIUM ALLOYS

High-Carbon Ferrochrome: Contract, c.l., lump, bulk 24.75c per lb of contained Cr; c.l., packed 25.65c, ton lot 26.80c, less ton 28.20c. Delivered. Spot, add 0.25c.

Low-Carbon Ferrochrome: (Cr 67-72%) Contract, carload, lump, bulk, max. 0.025% C (simplex) 34.60c per lb contained Cr, 0.03% C 36.50c, 0.04% C 35.50c, 0.06% C 34.50c, 0.10% C 34.00c, 0.15% C 33.75c, 0.20% C 33.50c, 0.50% C 33.25c, 1% C 33.00c, 1.50% C 32.85c, 2% C 32.75c. Carload packed add 1.1c, ton lot 2.2c, less ton add 3.9c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, High Carbon: (Cr 62-66%, C 5-7%) Contract, c.l. 8 M x D, bulk, 26.25c per lb contained Cr. Packed, c.l. 27.15c, ton 28.50c, less ton 30.25c. Delivered. Spot, add 0.25c.

Foundry Ferrochrome, Low Carbon: (Cr 50-54%, Si 28-32%, C 1.25% max.) Contract, carload, packed, 8 M x D, 18.35c per lb of alloy; ton lot 19.2c; less ton lot, 20.4c, delivered; spot, add 0.25c.

Low-Carbon Ferrochrome Silicon: (Cr 34-41%, Si 42-49%, C 0.05% max.) Contract, carload, lump, 4" x down and 2" x down, bulk, 25.75c per lb of contained chromium plus 12.4c per pound of contained silicon; 1" x down, bulk 25.90c per pound of contained chromium plus 12.60c per pound of contained silicon. F.o.b. plant; freight allowed to destination.

Ferrochrome Silicon, No. 2: (Cr. 36-39%, Si 26-39%, Al 7-9%, C 0.05% max.) 25.75c per lb of contained chrome plus 12.4c per lb of contained silicon plus aluminum 3" x down, delivered.

Chromium Metal: (Min 97% Cr and 1% Fe) contract, 1" x D; packed, max 0.50%, carload $1.12, ton lots $1.14, less ton $1.16. Delivered. Spot, add 5c. Prices on 0.10 per cent carbon grade, add 4c to above prices.

VANADIUM ALLOYS

Ferrovanadium: Open-hearth Grade (V 35-55%, Si 8-12% max, C 3-3.5% max). Contract, any quantity, $3.00 per lb of contained V. Delivered. Spot, add 10c. **Crucible-Special Grades** (V 35-55%, Si 2-3.5% max, C 0.5-1% max). $3.10. **Primos and High Speed Grades** (V 35-55%, 1.50% max, C 0.20% max) $3.20.

Grainal: Vanadium Grainal No. 1, $1 per lb; No. 6, 68c; No. 79, 50c, freight allowed.

Vanadium Oxide: Contract, less carload lots $1.28 per lb contained V_2O_5, freight allowed. Spot, add 5c.

SILICON ALLOYS

25-30% Ferrosilicon: Contract, carload, lump, bulk, 20.0c per lb of contained Si, packed 21.40c; ton lot 22.50c, f.o.b. Niagara Falls, freight not exceeding St. Louis rate allowed.

50% Ferrosilicon: Contract, carload, lump, bulk, 12.40c per lb of contained Si, carload packed 14.0c, ton lot 15.45c, less ton 17.1c. Delivered. Spot, add 0.45c.

Low-Aluminum 50% Ferrosilicon: (Al 0.40% max.) Add 1.3c to 50% ferrosilicon prices.

75% Ferrosilicon: Contract, carload, lump, bulk, 14.3c per lb of contained Si, carload packed 15.6c, ton lot 16.75c, less ton 18.0c. Delivered. Spot, add 0.8c.

90-95% Ferrosilicon: Contract, carload, lump, bulk, 17.0c per lb of contained Si, carload packed 18.2c, ton lot 19.15c, less ton 20.2c. Delivered. Spot, add 0.25c.

Silicon Metal: (Min 97% Si and 1% max Fe) C.l. lump, bulk, regular 18.5c per lb of Si, c.l. packed 19.7c, ton lot 20.6c, less ton 21.6c. Add 0.5c for max, 0.10% calcium grade. Deduct 0.5c for max 2% Fe grade analyzing min 96% Si. Spot, add 0.25c.

Alsifer: (Approx. 20% Al, 40% Si, 40% Fe) Contract, basis f.o.b. Niagara Falls, N. Y., lump, carload, bulk, 9.90c per lb of alloy, ton lots packed 11.30c, 20 to 1999 lb 11.65c, smaller lots 12.15c.

ZIRCONIUM ALLOYS

12-15% Zirconium Alloy: (Zr 12-15%, Si 30-43%, Fe 40-45%, C 0.20% max.). Contract, c.l. lump bulk 8.0c per lb of alloy, c.l. packed 8.75c, ton lot 9.5c, less ton 10.35c. Delivered. Spot, add 0.25c.

35-40% Zirconium Alloy: (Zr 35-40%, Si 47-52%, Fe 8-12%, C 0.50% max.). Contract, carload, lump, packed 20.25c per lb of alloy, ton lot 21c, less ton 22.25c. Freight allowed. Spot add 0.25c.

BORON ALLOYS

Ferroboron: (B 17.50% min, Si 1.50% max, Al 0.50% max, C 0.50% max). Contract, 100 lb or more, 1" x D, $1.20 per lb of alloy. Less than 100 lb $1.30. Delivered, spot, add 5c. F.o.b. Washington, Pa., prices, 100 lb and over, are as follows: Grade A (10-14% B) 75c per pound; Grade B (14-18% B) $1.20; Grade C (19% min B) $1.50.

Borosil: (3 to 4% B, 40 to 45% Si), $5.25 per lb contained B, delivered to destination.

Bortam: (B 1.5-1.9%). Ton lots, 45c per lb; smaller lots, 50c per lb.

Carbortam: (B 1 to 2%) contract, lump, carloads 9.50c per lb, f.o.b. Suspension Bridge, N. Y. freight allowed same as high-carbon ferrotitanium.

CALCIUM ALLOYS

Calcium-Manganese-Silicon: (Ca 16-20%, Mn 14-18% and Si 53-59%). Contract, carload, lump, bulk 20.0c per lb of alloy, carload packed 20.8c, ton lot 22.3c, less ton 23.3c. Delivered. Spot add 0.25c.

Calcium-Silicon: (Ca 30-33%, Si 60-65%, Fe 1.50-3%). Contract, carload, lump, bulk 19.0c per lb of alloy, carload packed 20.2c, ton lot 22.1c, less ton 23.6c. Deld. Spot add 0.25c.

BRIQUETTED ALLOYS

Chromium Briquets: (Weighing approx. 3% lb each and containing exactly 2 lb of Cr). Contract, carload, bulk, 16.25c per lb of briquet, carload packed 16.95c, ton 17.75c, less ton 18.65c. Deld. Add 0.25c for notching. Spot, add 0.25c.

Ferromanganese Briquets: (Weighing approx. 3 lb and containing exactly 2 lb of Mn). Contract, carload, bulk 12.45c per lb or briquet, c.l. packaged 13.25c, ton lot 14.05c, less ton 14.95c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicomanganese Briquets: (Weighing approx. 3½ lb and containing exactly 2 lb of Mn and approx. ½ lb of Si). Contract, c.l. bulk 12.65c, per lb of briquet, c.l. packaged 13.45c, ton lot 14.25c, less ton 15.15c. Delivered. Add 0.25c for notching. Spot, add 0.25c.

Silicon Briquets: (Large size — weighing approx. 5 lb and containing exactly 2 lb of Si). Contract, carload, bulk 6.95c per lb of briquet. Packed c.l. 7.75c, ton lot 8.85c, less ton 9.45c. Delivered. Spot, add 0.25c.
(Small size—weighing approx. 2½ lb and containing exactly 1 lb of Si). Carload, bulk 7.1c. Packed c.l 7.9c, ton lot 8.7c, less ton 9.6c. Delivered. Add 0.25c for notching, small size only. Spot, add 0.25c.

Molybdic-Oxide Briquets: (Containing 2½ lb of Mo each) $1.14 per pound of Mo contained, f.ob. Langeloth, Pa.

TUNGSTEN ALLOYS

Ferrotungsten: (70-80%), 10,000 lb W or more, $4.35 per lb of contained W; 2000 lb W to 10,000 lb W, $4.45: less than 2000 lb W, $4.57, f.o.b. Niagara Falls, N. Y.

OTHER FERROALLOYS

Ferrocolumbium: (Cb 56-60%, Si 8% max. C 0.4% max). Contract, ton lot, 2" x D, $6.40 per lb of contained Cb, less ton $6.45. Delivered. Spot, add 10c.

Ferrotantalum—Columbium: (Cb 40% approx. Ta 20% approx, and Cb and Ta 60% min, C 0.30% max) ton lots, 2" x D, $4.75 per lb of contained Cb plus Ta, deld.; less ton lots $4.80.

Silicaz Alloy: (Si 35-40%, Ca 9-11%, Al 6-8%, Zr 3-5%, Ti 9-11%, B 0.55-0.75%). Carload packed, 1" x D, 45c per lb of alloy, ton lot 47c, less ton 49c. Delivered.

SMZ Alloy: (Si 60-65%, Mn 5-7%, Zr 5-7%, Fe 20% approx). Contract, carload, packed, ½" x 12 M, 17.5c per lb of alloy, ton lots 18.25c, less ton 19.5c. Deld. Spot, add 0.25c.

Graphidox No. 4: (Si 48-52%, Ca 5-7%, Ti 9-11%). C.l. packed, 17.50c per lb of alloy; ton lots 18.50c; less ton lots 20c, f.o.b. Niagara Falls, N. Y.; freight allowed to St. Louis.

V-5 Foundry Alloy: (Cr 38-42%, Si 17-19%, Mn 8-11%). C.l. packed 15c per lb of alloy; ton lots 16.50c; less ton lots 17.75c, f.o.b., Niagara Falls; freight allowed to St. Louis.

Simanal: (Approx. 20% each Si, Mn, Al; bal. Fe) Lump, carload, bulk 14.50c. Packed c.l. 15.50, ton lots, 15.75c, less ton lots, 16.25c per lb of alloy. Delivered.

Ferrophosphorus: (23-25% based on 24% P content with unitage of $3 for each 1% of P above or below the base); carloads, f.o.b. sellers' works, Mt. Pleasant, Siglo, Tenn., $65 per gross ton.

Ferromolybdenum: (55-75%). Per lb contained Mo, f.o.b. Langeloth, $1.32 in all sizes except powdered which is $1.41; Washington, Pa., furnace, any quantity $1.32.

Technical Molybdic-Oxide: Per lb, contained Mo, f.o.b. Langeloth, Pa., $1.14 in cans; in bags, $1.13, f.o.b. Langeloth, Pa.; Washington, Pa., $1.13.

BETTER STAINLESS CLOSER CONTROL LOWER LABOR COSTS with ALLOYMET 2115

IN THE production of stainless steels, the trend is toward closer controls of analysis through the use of quality master alloy ingot. Our ALLOYMET 2115 ingot (70% Nickel—10% Chrome) is fast becoming the standard of the industry as a basic raw material in the production of stainless steels.

When ALLOYMET 2115 is used in the melt, the analysis of the finished product is never in doubt. Compare this with a heat of 18-8 scrap . . . but no, there is no comparison. Scrap—no matter how good it may be—is still an imperfect commodity that is generated; not made to order. ALLOYMET 2115, on the other hand, is a master alloy made to rigid specifications under the supervision of trained metallurgists who know the needs of the steel industry.

Steel producers are rapidly learning that to use master alloys in the place of scrap costs so very little more. Prove this by your own use.

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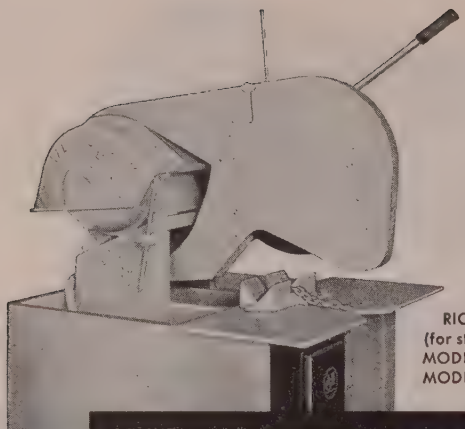


RIGHT ANGLE
(for straight cuts)
MODEL 75-10 RA
MODEL 10-15 RA

WISE ABRASIVE CUT-OFF SAWS

Give you **FASTER CUTS** *with*
MAXIMUM WHEEL LIFE

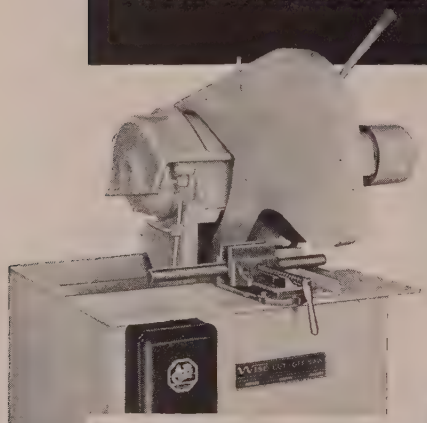
GREATER POWER IS THE SECRET

Wise saws are *power packed* with 7½ or 10 h.p. *HEAVY DUTY* motors. This permits faster cuts with extra hard 18" or 20" wheels. These wheels last longer and, in turn, produce more cuts per wheel dollar!

Wise saws also cost less than similar capacity saws—*much less!* Construction throughout is heavy duty. Designed to meet the needs of all industries. New safety guard is unmatched. Number 2 Magnetic Starter is standard equipment.

RIGHT ANGLE OR SWING HEAD TYPES

Both saws have the same outstanding construction and power features. WILL CUT UP TO 6" PIPE AND 8" CHANNEL IN ONLY A MATTER OF SECONDS!



SWING HEAD
(head swings for 90° to 45° mitre cuts)
MODEL 75-10 SH
MODEL 10-15 SH

Write for free descriptive folder No. WS-1000-4. Provides valuable data on recommended wheel grades for different types of cutting.

HENRY H. WISE CO.
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World's largest distributor of Manhattan Abrasive Wheels.

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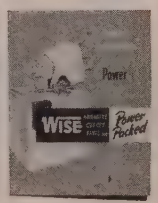

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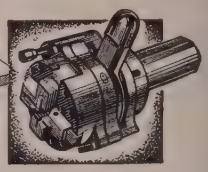
FOR YOU
MACHINING, FABRICATING WELDING, ASSEMBLIES OF Plate & Sheet Metal Products

Phone, write, wire for list of equipment and available time.

POE MACHINE & ENGINEERING CO., INC.
New Wilmington, Pa. Phone: 2261

The *Cleveland Steel Tool Co.*
• PUNCHES • DIES • CHISELS • RIVET SETS •
IF IT'S *RIVETED* YOU KNOW IT'S SAFE
•
WE FEATURE SPECIAL PUNCHES & DIES
660 E. 82nd ST., CLEVELAND, O.

H&G Insert Chaser DIE HEADS



famous for accuracy and straightness of threads, low chaser costs, less downtime, more pieces per day.

THE EASTERN MACHINE SCREW CORP., 22-42 Barclay Street, New Haven, Conn.
Pacific Coast Representative: *A. C. Berbringer, 334 N. San Pedro St., Los Angeles, California.* Canada: *F. P. Barber Machinery Co., Toronto, Canada.*

STAINLESS STEEL
—PERFORATED—
TO YOUR REQUIREMENTS
SEND US YOUR DWGS FOR PRICE

ALL SIZE AND SHAPE HOLES ALL METALS
ARCHITECTURAL GRILLES

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THEORY AND PRACTICE OF ROLLING STEEL By Wilhelm Tafel

312 Pages
Price Postpaid $4.50

Covers every angle of the design, construction and operation of the steel rolling mill.

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Book Department, 1213 W. 3rd St., Cleveland 13, O.

To lower your Overhead..

BROWNING ELECTRIC TRAVELING CRANES AND HOISTS
up to 125-TON CAPACITY

VICTOR R. BROWNING & CO., INC. WILLOUGHBY (Cleveland), OHIO

ORES-COKE-REFRACTORIES

Prices as reported to STEEL; changes shown in italics.

ORES

Lake Superior Iron Ore

(Prices effective July 1, 1953, and thereafter; gross ton, 51.50% iron natural, rail of vessel, lower lake ports.)

Old range bessemer	$10.30
Old range nonbessemer	10.15
Mesabi bessemer	10.05
Mesabi nonbessemer	9.90
Open-hearth lump	11.15
High phosphorus	9.90

The foregoing prices are based on upper lake rail freight rates, lake vessel freight rates, handling and unloading charges, and taxes thereon which were in effect on June 24, 1953, and increases or decreases after such date are for buyer's account.

Eastern Local Iron Ore

Cents per unit del. E. Pa.

Foundry and basic 56-62% concentrates contract	17.00-18.00

Foreign Iron Ore

Cents per unit, c.i.f. Atlantic ports

Swedish basic, 60 to 68%:	
Spot	nom.
Long-term contract	22.00
North African hematites (spot)	24.00-26.00
Brazilian iron ore, 68-69% (spot)	25.00

Tungsten Ore

Net ton unit, duty paid

Foreign wolframite and scheelite, per net ton unit	$55.00
Domestic scheelite, mine	63.00

Manganese Ore

Manganese, 48% nearby, $1.18-1.21 per long ton unit, c.i.f. U. S. ports, duty for buyer's account; shipments against old contracts for 48% ore are being received from some sources at 90-93c.

Chrome Ore

Gross ton, f.o.b. cars, New York, Philadelphia, Baltimore, Charleston, S. C., plus ocean freight differential for delivery to Portland, Oreg., or Tacoma, Wash.

Indian and African

48% 2.8:1	$40.00-$42.00
48% 3:1	44.00-46.00
48% no ratio	32.00-34.00

South African Transvaal

44% no ratio	$27.00-28.00
48% no ratio	34.00-35.00

Brazilian

44% 2.5:1 lump	nom. $32

Domestic

(Rail nearest seller)

48% 3:1	$39.00

Molybdenum

Sulphide concentrates per lb. molybdenum content, mines	$1.00

REFRACTORIES

Fire Clay Brick

High-Heat Duty: Pueblo, Colo., $89.00; Ashland, Grahn, Hayward, Hitchins, Haldeman, Olive Hill, Ky., Athens, Troup, Tex., Beech Creek, Clearfield, Curwensville, Lochhaven, Lumber, Orviston, West Decatur, Pa., Bessemer, Ala., Farber, Mexico, St. Louis, Vandalia, Mo., Ironton, Oak Hill, Parral, Portsmouth, O., Ottawa, Ill., Stevens Pottery, Ga., Woodbridge, N. J., $109.00; Salina, Pa., $114.00; Niles, O., $109; Los Angeles, Pittsburg, Calif., $132.30.

Silica Brick

Standard: Alexandria, Claysburg, Mt. Union, Sproul, Pa., Ensley, Ala., Portsmouth, O., $115.00; Hays, Pa., $120.00; Niles, O., $107; E. Chicago, Ind., Joliet, Rockdale, Ill., $125.00; Cutler, Utah, $116.55; Los Angeles, $122.85.

Insulating Fire Brick

2300° *F:* Massillon, O., $178.50; Clearfield, Pa., $197.50; Augusta, Ga., Beaver Falls, Zelienople, Pa., Mexico, Mo., $186.90.

Ladle Brick

Dry Pressed: Bessemer, Ala., $64.60; Alsey, Ill., Chester, New Cumberland, W. Va., Freeport, Johnstown, Merrill Station, Pa., Wellsville, O., $77.50; Mexico, Mo., $73.50; Clearfield, Pa., Portsmouth, O., $83; Perla, Ark., $109.00; Los Angeles, $110.25; Pittsburg, Calif., $111.30.

Sleeves

Reesdale, Pa., $139.70; Johnstown, Pa., $140.00; Clearfield, Pa., $148.50; St. Louis, $151.80; Athens, Tex., $155.00.

Nozzles

Reesdale, Pa., $223.50; Johnstown, Pa., $229.20; Clearfield, Pa., $241.40; St. Louis, $247.10; Athens, Tex., $247.70.

Runners

Reesdale, Pa., $174.00; Johnstown, Pa., $177.80; Clearfield, Pa., $185.50; St. Louis, $187.30; Athens, Tex., $191.80.

High-Alumina Brick

50 *Per Cent:* Clearfield, Pa., St. Louis, Mexico, Mo., $179.00; Danville, Ill., $169.30.
60 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $223.00; Danville, Ill., $213.20.
70 *Per Cent:* St. Louis, Mexico, Vandalia, Mo., $255.00; Danville, Ill., $258.00; Clearfield, Pa., $252.

Dolomite

Domestic, dead-burned bulk; Billmeyer, Blue Bell, Williams, Plymouth Meeting, Pa., Millville, W. Va., Millersville, Martin, Gibsonburg, Woodville, O., $13.75; Thornton, McCook, Ill., $13.85; Dolly Siding, Bonne Terre, Mo., $13.65; Nario and Bettsville, O., $14.50.

Magnesite

Domestic, deadburned bulk; Luning, Nev., $38.

METALLURGICAL COKE

Price per net ton

Beehive Ovens

Connellsville, furnace	$14.50-15.00
Connellsville, foundry	16.50-17.00
New River foundry	20.80
Wise county foundry	15.95
Wise county, furnace	15.20

Oven Foundry Coke

Kearney, N. J. ovens	$24.00
Everett, Mass., ovens	
New England, del.	*26.00
Chicago ovens	24.50
Chicago, del.	26.00
Terre Haute, ovens	24.05
Milwaukee, ovens	25.25
Indianapolis, ovens	24.25
Chicago, del.	28.12
Cincinnati, del.	25.85
Painesville, O., ovens	25.50
Cleveland, del.	27.43
Erie, Pa., ovens	25.00
Birmingham, ovens	21.65
Cincinnati, del.	26.58
Lone Star, Tex., ovens	18.50
Philadelphia, ovens	23.95
Swedeland, Pa., ovens	23.85
St. Louis, ovens	
St. Louis, del.	26.00
St. Paul, ovens	23.75
Portsmouth, O., ovens	24.00
Cincinnati, del.	26.62
Detroit, ovens	25.50
Detroit, del.	26.50
Buffalo, del.	28.08
Flint, del.	28.23
Pontiac, del.	27.06
Saginaw, del.	28.58

*Or within $4.55 freight zone from works.

COAL CHEMICALS

Spot, cents per gallon, ovens

Pure benzol	36.00
Toluol, one deg.	30.00-33.00
Industrial xylol	30.00-33.50

Per ton, bulk, ovens

Sulphate of ammonia	$44-45
Birmingham area	$49.50

Cents per pound, ovens

Phenol, 40 (carlots, nonreturnable drums)	17.25

FLUORSPAR

Metallurgical grades, f.o.b. shipping point, in Ill., Ky., net tons, carloads, effective CaF_2 content 72.5%, $44; 70%, $42.50; 60%, $38. Imported, net ton, duty paid, metallurgical grade, $35-$36.

ELECTRODES

(Threaded, with nipples, unboxed f.o.b. plant)

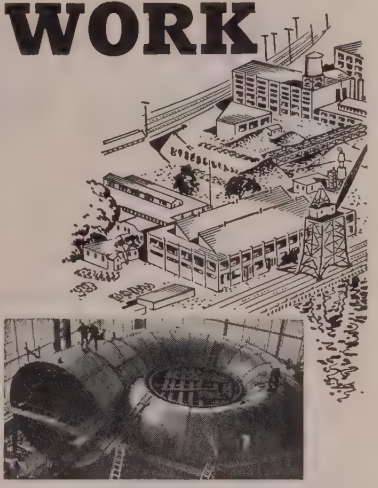
GRAPHITE

Inches Diam.	Length	Cents per lb
17,18,20	60,72	17.85
8 to 16	48,60,72	17.85
7	48,60	19.57
6	48,60	20.95

CARBON

35,40	110	8.03
30	65,84,110	8.03
24	72 to 104	8.03
17 to 20	34,90	8.03

STEEL PLATE WORK



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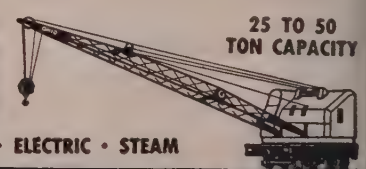

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in Plate . . .

(*Concludede from Page* 136)

roducers say the second and third tarters have been very good. Optiism is high over new tin plate uses ch as bottling of soft drinks.

Consumers are signing up at sixonth intervals for tin plate now, order to get a set price for that terval. New prices will be in efct Oct. 1. Since the present price hedules were established, most nished steel products have increased price and tin has dropped, makg it doubtful which way tin plate rices will go.

tructural Shapes . . .

Structural Shape Prices, Page 120

Boston—A total of 177 bridges will e built for the Boston-New York ne toll highway. About 125 of iem will be beam spans and many ill be six laned. Only a few large onnage projects are being estimated urrently, although approaches to the ridge at Agawam, Mass., will take 200 tons. Wide-flanged beams are mong the tightest of all steel proucts and there is no indication of n easier supply. District shop backogs hold at around three months.

New York—Little new commercial ork is out, but public work is still airly brisk. Bids were closed on bout 5500 tons of state thruway ork late last week. On the point f being placed are 2250 tons for a ity prison in Brooklyn, N. Y. In ddition, about 1000 tons are pendng for a Port Authority pier shed in Hoboken, N. J.

Philadelphia—While sizable structural projects are pending, current usiness is slack. Most of that which is active is public work, primarily bridges. Most fabricating shops have comfortable backlogs, exceptions being chiefly among the smaller shops which are not equipped o figure on much, if any, bridgework. It is among these smaller hops that competition is keenest.

Los Angeles—Shell Oil Co. will construct a $1,750,000 platforming addition to the Martinez refinery. Completion is scheduled by July, 1954.

Seattle—Several sizable structural jobs are up for figures in Alaska. Small awards are numerous, but public works requirements continue to lead. Backlogs are fair and fabricators anticipate good business in the fourth quarter.

Metallurgical Coke . . .

Metallurgical Coke Prices, Page 141

Sydney, N. S.—Dominion Steel & Coal Corp., has put into operation its new $5 million 61-oven coke battery, marking completion of a $9 million coke oven replacement program that will boost coking capacity 50 per cent. The new ovens will produce metallurgical and domestic coke, gas, tar, sulphate of ammonia and light oil.

Iron Ore . . .

Iron Ore Prices, Page 141

Cleveland — Vessels in the Great Lakes fleet continue to bring down ore at a record pace. Shipments for the week ended Aug. 17 amounted to 3,409,820 tons compared with 3,201,825 tons for the like 1952 period. Total shipments for the season to Aug. 17 amount to 58,492,322 tons, an increase of nearly 90 per cent over the 30,830,868-ton total for the like period a year ago.

Pig Iron . . .

Pig Iron Prices, Page 124

New York—Pig iron sales reflect the continued lag in gray iron foundry operations here. Some sellers report a slight pick-up from July, but most doubt there will be any appreciable gain before early September, pending the end of the vacation period. Consumer inventories are the best since before the outbreak of the Korean war. An increasing amount of foreign iron is being offered at prices fully competitive with domestic iron, but little tonnage has been reported placed in this immediate area.

Buffalo — Pig iron production jumped in this district as Tonawanda Iron Division, American Radiator & Standard Sanitary Corp., relighted a furnace which had been down for relining. The merchant pig iron market is spotty with a leveling off in demand from Michigan motor casters.

Philadelphia—Lag in pig iron continues. Despite the fact that one district furnace—the smaller one at Swedeland—is down for relining, there appears to be little pressure for foundry iron. Consumers' inventories are in fair shape and operations still reflect the seasonal lull in activity.

Cincinnati — Orders for pig iron from foundries in this area are tapering. Everyone seems to have a fairly adequate supply and less melting is being done.

Chicago — Pig iron supply has grown easier in recent weeks and foundries currently are getting all they need. For the next month or two, no complications can be sighted. As matter of fact, further

easing could occur, this as result of reduced auto assemblies stemming from General Motors Corp.'s automotive transmission plant fire at Livonia, Mich. The automotive industry has been bolstering castings output. Recent easing in iron has been due to the slowness in the agricultural implements industry.

Los Angeles — With backlog of some foundries' orders reduced up to 50 per cent due to lessened requirements from oil fields and petroleum refineries, movement of pig iron to the trade has declined.

Scrap . . .

Scrap Prices, Page 146

Philadelphia — Prices on major grades of open-hearth scrap have again eased on rather spotty hand-to-mouth buying. Most consumers have ample inventories and, while willing to commit themselves on some tonnage, are not pressing for it.

No. 1 heavy melting, No. 1 bundles and No. 1 busheling are now $42-$43, delivered; No. 2 heavy melting, $37.50-$38.50; and No. 2 bundles, $35.50. Electric furnace bundles are off more or less nominally to $44-$45, delivered.

Mixed borings and turnings are lower at $30-$31, delivered; heavy turnings at $41-$42; short shovel turnings, at $31; and machine shop turnings, $27. Couplers, springs and wheels are off slightly to $49.50-$50, delivered.

In the cast grades, heavy breakable is off $1 to $41-$42; No. 1 cupola is lower at $38.

Boston—Prices for heavy melting steel grades, bundles and machine shop turnings are lower. Most activity is centered in No. 2 heavy melting. Cast scrap demand is slow with mixed and cupola cast prices lower.

New York—While brokers' buying prices on open-hearth scrap are unchanged, following recent reductions, general tone of the market continues easy. Prices have dropped on mixed borings and short turnings to $21-$22; on No. 1 cupola, to $32-$33; and on unstripped motor blocks, to $24-$25. Reductions amount to about $1 a ton in each case. Consumer buying generally is spotty.

Pittsburgh — The scrap market here is weak and probably will remain slow for several weeks. Prices are unchanged. In mid-September, dealers expect business to pick up, as industry begins to build its inventories for winter.

Buffalo—Easier tendencies rule the scrap market here, but persistent efforts by the leading mill consumer to beat down prices proved unsuccessful. Dealers refused to accept new business below current ranges and the mill likewise stayed out of the market. Another mill placed business at unchanged prices. Lower prices in other areas tended to weaken the local market.

Cleveland—Undertone of the scrap market is weak. The market is described as "dead" with neither mills nor foundries placing any new orders. When the mills re-enter the market early next month, prices probably will be cut $2 to $3 per ton under present levels. No. 1 heavy melting is nominally $44-$45.

Detroit—Curtailment of production at Pontiac, Oldsmobile and Cadillac are being blamed for a sharp downturn in scrap orders. Observers watch for some dropping in prices shortly as the market starts to soften.

Chicago—Open-hearth scrap can be purchased for $2 to $3 less per ton as compared with prices quoted a week ago. This tags No. 1 heavy melting steel at $42; No. 1 factory bundles, $43; No. 2 dealer bundles, $33. Boring and turning grades are off similarily. Buying at the reduced levels is negligible. One large consumer is expected to make commitments within a week for September delivery; another important user is out of the market for several weeks. Even railroad grades have suffered in the weakness.

St. Louis—Scrap prices have broken $1 to $4 here under continued disinterest among major consumers in stockpiling for winter needs. Only one mill bought last week, with a 10,000-15,000 ton order for No. 2 steel distributed among many brokers. That was at $1 under previous market. No. 1 and No. 2 bundles were marked down $2 and $4, respectively, with no takers. Railroad scrap quotations likewise went down under the prospect that heavy offerings next week will encounter slack demand.

Los Angeles—Demand for scrap is slightly stronger, but prices are unchanged. With mill inventories estimated by dealers at six months' supply, scrap movement to mills is limited.

Washington — Stocks of iron and steel scrap at consumers' plants continued their decline and by June 30 totaled 4,510,000 gross tons of purchased material and 1,199,000 tons of home scrap, the U. S. Bureau of Mines reports.

At the end of May, consumers had 4,696,489 tons of purchased scrap and 1,199,091 tons of home scrap.

The June 30 stock of purchased scrap was the lowest month-end figure recorded this year. On the other hand, the June 30 stock of home scrap almost equaled the year's high registered in May.

Scrap consumption in June dropped somewhat below that of May. Usage

Stateside to Alaska Via Barge

Overt 150 tons of steel from Bethlehem Pacific Coast Steel Corp. in Seattle, Wash., go on the first barge ever to transfer loaded railroad cars from stateside to Alaska. Foss Launch & Tug Co. provide the service from Tacoma and the steel is headed for the Ketchikan Pulp Co. mill being built at Ward Cove, Alaska. Unloading will be accomplished by use of a bridge which is designd to tilt as the weight of the barge changes while railroad cars are being unloaded

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in June took 2,835,000 tons of purchased scrap and 3,115,000 tons of home scrap, compared with 3,105,598 tons of purchased material and 3,189,322 tons of home scrap in May.

Average charge of foundries and steelmaking furnaces in June was 51.6 per cent scrap and 48.4 per cent pig iron, approximately the same ratios as in May.

Seattle — Oregon buyers have raised steel scrap prices $2 a ton, offering $29 for No. 2 heavy melting. This was done to increase inventories against a heavy backlog.

In Seattle, prices are unchanged at $31 for No. 1 and $27 for No. 2. Recently, Puget Sound Navy yard on bids sold 450 tons of No. 1 unprepared heavy melting at $29. This yard material is exceptionally high grade and about 75 per cent is prepared, but offered unprepared. Bidding is keen for Navy scrap. Buyers in this area are trying to hold the market at current levels, but receipts are not too heavy and inventories have decreased.

STRUCTURAL SHAPES . . .

STRUCTURAL STEEL PLACED

3000 tons, plant of Anaconda Aluminum Co., Columbia Falls, Mont., to Vinnell Inc., Los Angeles, and American Bridge Co., Pittsburgh.

300 tons, tower for General Petroleum refinery, Ferndale, Wash., to Pacific Car & Foundry Co., Seattle.

250 tons, plate girder bridge over Boston & Albany railroad, West Springfield, Mass., to Phoenix Bridge Co., Phoenixville, Pa., through Daniel O'Connell & Sons, Holyoke, Mass., general contractor.

190 tons, consistory building, Wilmington, Del., to Bethlehem Fabricators Inc., Bethlehem, Pa.

160 tons, store, Sears Roebuck & Co., Hamden, Conn., to Standard Structural Steel Co., Hartford, Conn.

150 tons, state bridge, Dauphin county, Pennsylvania, to Bethlehem Steel Co., Bethlehem, Pa.

150 tons, state highway bridge, Burlington, Mass., to Bethlehem Steel Co., through Campanella & Cardi Co., Hillsgrove, R. I., general contractor.

100 tons, classified Hanford project, to Isaacson Iron Works, Seattle.

100 tons, addition to Tacoma's steam power plant, to Leckenby Structural Steel Co., Seattle.

100 tons, roof trusses, maintenance building, Delta, Alaska, to Leckenby Structural Steel Co., Seattle.

STRUCTURAL STEEL PENDING

3600 tons, Columbia river, Umatilla county, Oregon; bids to Judge J. J. Sturgis, Pendleton, Oreg., Aug. 25.

2700 tons, state thruway bridgework, involving 14 structures, Orange county, New York; bids closed Aug. 20.

2500 tons, hangars, Fairchild airfield, Washington state; bids in.

2300 tons, state thruway bridgework, involving 10 structures, Rockland county, New York; bids closed Aug. 20.

2250 tons, city prison, Brooklyn, N. Y.; Gerace & Castagna, Queens Borough, low on general contract.

2100 tons, galvanized steel towers; bids rejected by Bonneville Power Administration; rebids expected.

1000 tons, shed for Pier C, Hoboken, N. J., for Port of New York Authority; bids Aug. 25.

700 tons, Army warehouse, Fort Richardson,

(*Please Turn to Page* 148)

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IRON AND STEEL SCRAP

Consumer prices, per gross ton, except as otherwise noted, including broker's commissions, as reported to STEEL. Changes shown in italics.

STEELMAKING SCRAP COMPOSITE

Aug. 20	$43.17
Aug. 13	44.17
July avg.	43.51
Aug. 1952	43.00
Aug. 1948	43.33

Based on No. 1 heavy melting grade at Pittsburgh, Chicago and eastern Pennsylvania.

PITTSBURGH

(Delivered consumer plant)

No. 1 heavy melting	45.00-46.00
No. 2 heavy melting	42.00-43.00
No. 1 bundles	45.00-46.00
No. 2 bundles	40.00-41.00
No 1 busheling	44.00-45.00
Machine shop turnings	27.00-28.00
Mixed borings, turnings	30.00-31.00
Short shovel turnings	31.00-32.00
Cast iron borings	30.00-31.00
Cut structurals	48.00-49.00
Heavy turnings	41.00-42.00
Punchings & plate scrap	49.00-50.00
Electric furnace bundles	48.00-49.00

Cast Iron Grades

No. 1 cupola	43.00-44.00
Charging box cast	42.00-43.00
Heavy breakable cast	40.00-41.00
Unstripped motor block	35.00-36.00
No. 1 machinery cast	49.00-50.00

Railroad Scrap

No. 1 R.R. heavy melt.	46.00-47.00
Rails, 2-ft. and under.	53.00-54.00
Rails, 18-in. and under	54.00-55.00
Rails, random lengths	49.00-50.00
Rails specialties	51.50-52.50

CLEVELAND

(Delivered consumer plant)

No. 1 heavy melting	44.00-45.00
No. 2 heavy melting	41.00-42.00
No. 1 bundles	44.00-45.00
No. 2 bundles	39.00-40.00
No. 1 busheling	44.00-45.00
Machine shop turnings	24.00-25.00
Mixed borings, turnings	28.00-29.00
Short shovel turnings	28.00-29.00
Cast iron borings	28.00-29.00
Low phos.	46.00-47.00
Alloy free, short shovel turnings	31.00-32.00
Electric furnace bundles	45.00-46.00

Cast Iron Grades

No. 1 cupola	45.00-46.00
Charging box cast	44.00-45.00
Stove plate	43.00-44.00
Heavy breakable cast.	38.00-39.00
Unstripped motor blocks	27.00-28.00
Brake shoes	38.00-39.00
Clean auto cast	46.00-47.00
No. 1 wheels	40.00-41.00
Burnt cast	35.00-36.00
Drop broken machinery	49.00-50.00

Railroad Scrap

No. 1 R.R. heavy melt.	46.00-47.00
R. R. Malleable	50.00-51.00
Rails, 3-ft. and under.	52.00-53.00
Rails, 18 in. and under	55.50-56.50
Rails, random lengths.	48.50-49.50
Cast steel	50.00-51.00
Railroad specialties	52.00-53.00
Uncut tires	51.00-52.00
Angles, splice bars	53.00-54.00
Rails, rerolling	55.00-56.00

YOUNGSTOWN

(Delivered consumer plant)

No. 1 heavy melting	45.00-46.00
No. 2 heavy melting	42.00-43.00
No. 1 bundles	45.00-46.00
No. 2 bundles	40.00-41.00
Machine shop turnings	26.00-27.00
Short shovel turnings.	31.00-32.00
Cast iron borings	31.00-32.00
Low phos.	48.00-49.00
Electric furnace bundles	48.00-49.00

Railroad Scrap

No. 1 R.R. heavy melt.	48.00-49.00

PHILADELPHIA

(Delivered consumer plant)

No. 1 heavy melting	*42.00-43.00*
No. 2 heavy melting	*37.50-38.50*
No. 1 bundles	*42.00-43.00*
No. 2 bundles	*35.50*
No. 1 busheling	*42.00-43.00*
Electric furnace bundles	*44.00-45.00*
Machine shop turnings	*27.00*
Mixed borings, turnings	*30.00-31.00*
Short shovel turnings	*31.00*
Structurals & Plate	46.00-47.00
Heavy turnings	*41.00-42.00*
Couplers, springs, wheels	*49.50-50.00*

Cast Iron Grades

No. 1 cupola	*38.00*
Charging box cast	40.00
Heavy breakable cast	*41.00-42.00*
Unstripped motor blocks	32.00
Drop broken machinery	47.00-48.00

NEW YORK

(Brokers' Buying Prices)

No. 1 heavy melting	35.00
No. 2 heavy melting	30.00-31.00
No. 1 bundles	35.00
No. 2 bundles	28.00-29.00
Machine shop turnings	18.00-19.00
Mixed borings, short turnings	*21.00-22.00*
Low phos. (sstructural & plate)	38.00-39.00
Short shovel turnings.	22.00-23.00

Cast Iron Grades

No. 1 cupola	*32.00-33.00*
Unstripped motor blocks	*24.00-25.00*

DETROIT

No. 1 heavy melting	37.50-38.50
No. 2 heavy melting	33.00-34.00
No. 1 bundles	40.00-41.00
No. 2 bundles	30.00-31.00
No. 1 busheling	35.00-36.00
Machine shop turnings.	17.00-18.00
Mixed borings, turnings	19.00-20.00
Short shovel turnings.	21.00-22.00
Punchings & Plate scrap	39.00-40.00

Cast Iron Grades

No. 1 cupola	43.00
Changing box cast	34.00-35.00
Stove plate	34.00-35.00
Heavy breakable	29.00-30.00
Unstripped motor blocks	30.00
Clean auto cast	42.00-43.00
Malleable	44.00

CINCINNATI

(Brokers' Buying Prices)

No. 1 Heavy melting	43.00
No. 2 heavy melting	40.00
No. 1 bundles	43.00
No. 2 bundles	37.00
No. 1 busheling	43.00
Machine shop turnings	19.00*
Mixed borings, turnings	23.00*
Short shovel turnings	23.00-24.00*
Cast iron borings	23.00*

Cast Iron Grades

No. 1 cupola	45.00
Charging box cast	40.00
Heavy breakable cast	40.00
Drop broken machinery	50.00

Railroad Scrap

No. 1 R.R., heavy melt.	46.00
Malleable	47.00
Rails, 18-in. and under	55.00
Rails, random lengths.	47.00

*F.o.b. shipping point.

CHICAGO

No. 1 heavy melting	*41.00-42.00*
No. 2 heavy melting	*37.00-38.00*
No. 1 factory bundles	*42.00-43.00*
No. 1 dealer bundles	*41.00-42.00*
No. 2 bundles	32.00-33.00
No. 1 busheling	*41.00-42.00*
Machine shop turnings	*21.00-22.00*
Mixed borings, turnings	*23.00-24.00*
Short shovel turnings	*23.00-24.00*
Cast iron borings	*23.00-24.00*
Cut structurals, 3-ft.	*46.00-47.00*
Punchings & plate scrap	*46.00-47.00*
Electric furnace bundles	45.00-46.00

Cast Iron Grades

No. 1 cupola	41.00-43.00
Stove plate	35.00-37.00
Unstripped motor blocks	35.00-37.00
Clean auto cast	45.00-47.00
Drop broken machinery	45.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt	*44.00-45.00*
R.R. Malleable	43.00-45.00
Rails, 2-ft. and under	*53.00-54.00*
Rails, 18-in. and under	*54.00-55.00*
Angles, splice bars	51.00-52.00
Rails, rerolling	*55.00-57.00*

BIRMINGHAM

No. 1 heavy melting	31.00-32.00
No. 2 heavy melting	27.00-28.00
No. 1 bundles	29.50-30.50
No. 2 bundles	29.00-30.00
Machine shop turnings.	20.75-21.75
Short shovel turnings.	22.75-23.75
Cast Iron borings	22.75-23.75
Cut structurals	39.00-40.00
Electric furnace bundles	32.00-33.00

Cast Iron Grades
(F.o.b. Shipping Point)

No. 1 cupola	39.00-40.00
Charging box cast	30.00-31.00
Stove plate	35.00-36.00
Heavy breakable cast.	30.00-31.00
Unstripped motor blocks	34.00-35.00
No. 1 wheels	46.00-47.00

Railroad Scrap

No. 1 R.R. heavy melt.	35.00-36.00
Rails, 2-ft and under.	45.00-46.00
Rails, random lengths.	42.00-43.00
Angles, splice bars	45.00-46.00
Rails, rerolling	45.00-46.00

ST. LOUIS

(Brokers' Buying Prices)

No. 1 heavy melting	43.00-44.00
No. 2 heavy melting	*32.50-33.50*
No. 1 bundles	*37.00-38.00*
No. 2 bundles	*30.00-31.00*
Machine shop turnings	*17.00-18.00*
Short shovel turnings	*19.00-21.00*

Cast Iron Grades

No. 1 cupola	41.00-42.00
Charging box cast	35.00-36.00
Heavy breakable cast.	35.00-36.00
Unstripped motor blocks	*34.00-35.00*
Brake shoes	41.00
Clean auto cast	44.00
Burnt cast	34.00-35.00

Railroad Scrap

Malleable	42.00-43.00
Rails, 18-in. and under	*50.00-51.00*
Rails, random lengths	*46.00-48.00*
Uncut tires	*44.00-45.00*
Angles, splice bars	46.00-47.00
Rails, rerolling	51.00-53.00

BUFFALO

No. 1 heavy melting	43.50-44.00
No. 2 heavy melting	40.00-40.50
No. 2 bundles	38.00-38.50
No. 1 bundles	43.50-44.50
No. 1 busheling	43.50-44.50
Machine shop turnings	26.00-27.00
Mixed borings, turnings	31.50-32.00
Short shovel turnings	31.50-32.00
Cast iron borings	31.50-32.00
Low phos.	47.50-48.00

Cast Iron Grades
(F o.b. Shipping Point)

No. 1 cupola	40.00-41.00
No. 1 machinery	44.00-45.00

Railroad Scrap

Rails, random lengths.	48.50-49.00
Rails, 2 ft and under.	53.50-54.00

BOSTON

(Brokers' Buying Prices; f.o.b shipping points)

No. 1 heavy melting	*32.00-32.50*
No. 2 heavy melting	*28.00-28.50*
No. 1 bundles	*32.00-32.50*
No. 2 bundles	*26.00-26.50*
Machine shop turnings	*17.00*
Mixed borings, turnings	*20.00-21.00*
Short shovel turnings	*22.00*
No. 1 cast	30.00-31.00
Mixed cupola cast	26.00-28.00
No. 1 machinery cast	38.00-39.00

SEATTLE

(Delivered consumer plant)

No. 1 heavy melting	31.00
No. 2 heavy melting	27.00
No. 1 bundles	29.00
No. 2 bundles	23.00
No. 3 bundles	19.00
Machine shop turnings	13.00
Mixed borings, turnings	13.00
Short shovel turnings.	13.00
Electric Furnace, No. 1	38.00-40.00

Cast Iron Grades
(F.o.b. Shipping Point)

No. 1 cupola	30.00-35.00
Heavy breakable cast.	30.00-35.00
Unstripped motor blocks	27.00
No. 1 wheels	38.00-40.00
Stove plate	26.00

Railroad Scrap

Rails, random lengths.	34.00-35.00

SAN FRANCISCO

No. 1 heavy melting	28.00
No. 2 heavy melting	24.00
No. 1 bundles	25.00
No. 2 bundles	22.00
No. 1 busheling	28.00
Machine shop turnings.	10.00
Mixed borings, turnings	29.00
Short shovel turnings.	29.00
Cast iron borings	29.00
Cut structurals	38.00
Heavy turnings	34.00
Punchings & plate scrap	37.50
Electric furnace bundles	37.00

Cast Iron Grades

No. 1 cupola	39.00
Charging box cast	47.00
Stove plate	46.00
Heavy breakable cast.	45.00
Unstripped motor blocks	41.00
Brake shoes	41.00
Clean auto cast	52.00
No. 1 wheels	47.00
Burnt cast	41.00
Drop broken machinery	52.00

Railroad Scrap

No. 1 R.R. heavy melt.	37.00
Malleable	55.00
Rails, 3-ft and under.	42.00
Rails, 18-in. and under	45.00
Rails, random lengths.	39.00
Cast steel	40.00
Uncut tires	39.00
Angles, splice bars	42.00
Rails, rerolling	44.00

LOS ANGELES

No. 1 heavy melting	24.00
No. 2 heavy melting	20.00
No. 1 bundles	23.00
No. 2 bundles	20.00
Machine shop turnings.	8.00

Cast Iron Grades
(F.o.b. Shipping Point)

No. 1 cupola	37.00-40.00

HAMILTON, ONT.

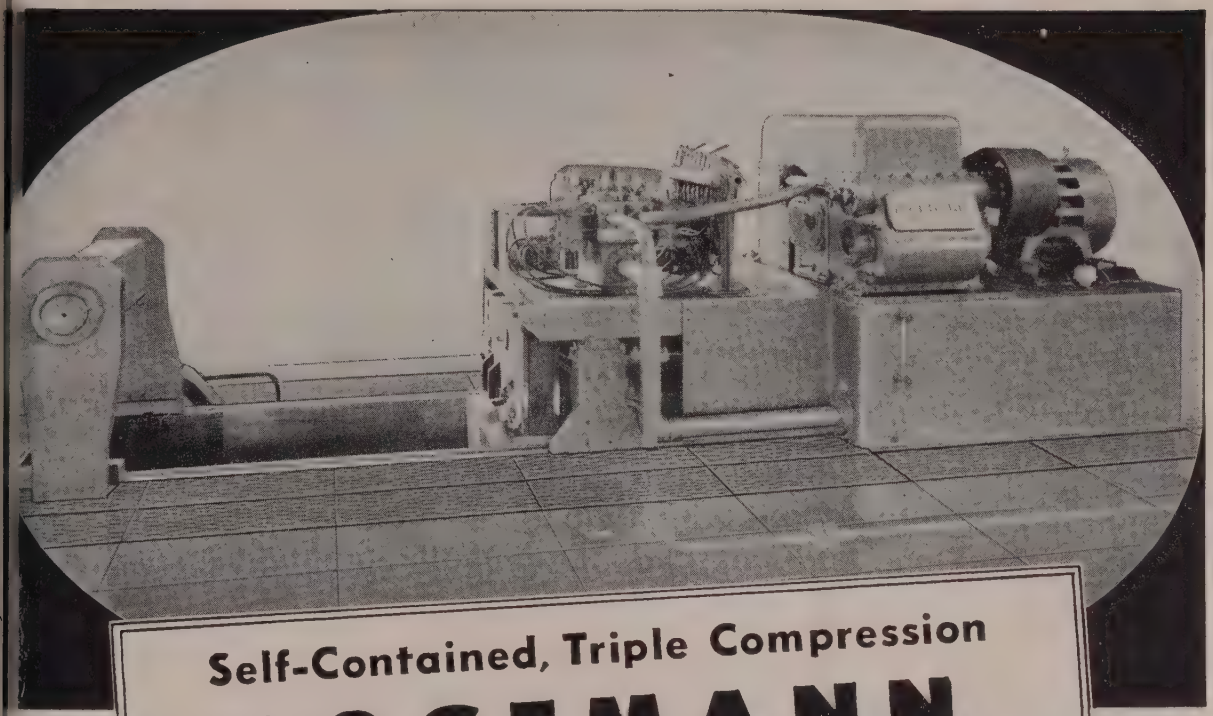
(Delivered Prices)

Heavy melting	$32.50
No. 1 bundles	32.50
No. 2 bundles	32.50
Mechanical bundles	28.50
Mixed steel scrap	28.50
Mixed borings, turnings	26.50
Rails, remelting	32.50
Rails, rerolling	41.50
Busheling	26.50
Busheling new factory: Prep'd	30.50
Unprep'd	28.50
Short steel turnings	22.50

Cast Iron Grades

No. 1 machinery cast	46.00-50.00

† F.o.b., shipping point.



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(*Concluded from Page 145*)

Alaska; bids to U. S. Engineer, in September.

500 tons, slide gates and equipment, Lucky Peak dam, Idaho; Pacific Coast Engineering Co., Alameda, Calif., low $292,015, to U. S. Engineer, Walla Walla, Wash.

450 tons, state thruway bridgework, two structures, Westchester county, New York; bids closed Aug. 20.

400 tons, Army warehouse, Whittier, Alaska; bids to U. S. Engineer soon.

296 tons, state highway bridge, Cumberland county, Pennsylvania; bids Aug. 28.

175 tons, alert hangar, air base, Bedford, Mass.; bids in.

123 tons, Lancaster county, Pennsylvania; bids Aug. 28.

100 tons, state bridge, Washington county, Pennsylvania; bids Aug. 28.

100 tons, passenger air terminal, Ft. Dix, N. J.; bids Sept. 11.

REINFORCING BARS . . .

REINFORCING BARS PLACED

340 tons, men's dormitory University of Idaho, Moscow, Idaho, to Bethlehem Pacific Coast Steel Corp., Seattle.

305 tons, addition to Buckley state school, Washington state, to Bethlehem Pacific Coast Steel Corp., Seattle; MacDonald Building Co, Tacoma, Wash., general contractor.

270 tons, Washington state overcrossing, Lewis county, to Bethlehem Pacific Coast Steel Corp., Seattle; N. Fiorito & Co., Seattle, general contractor.

245 tons, United Pacific Insurance building, Tacoma, Wash., to Bethlehem Pacific Coast Steel Corp., Seattle.

225 tons, improvements at Ft. Lewis, Washington, to J. D. English Steel Co., Tacoma.

200 tons, Washington state highway projects, to Northwest Steel Rolling Mills Inc., Seattle.

165 tons, Palmer, Alaska, school and Washington state highway projects, to Bethlehem Pacific Coast Steel Corp., Seattle.

135 tons, Mack Truck Co, shop and hotel alteration, Seattle, to Bethlehem Pacific Coast Steel Corp., Seattle.

130 tons, box girder bridge, Yakima county, Washington, to Bethlehem Pacific Coast Steel Corp., Seattle; Clifton & Applegate general contractors.

100 tons, Washington state bridges, Lewis county, to Joseph T. Ryerson & Son Inc., Seattle.

REINFORCING BARS PENDING

1615 tons, structures and bridge decks, West Virginia turnpike; bids in, Aug. 18, Charleston, W. Va.

1510 tons, bridges, Ohio turnpike; bids Sept. 9, Columbus, O.

1440 tons, structures and paving, Ohio turnpike; bids Aug. 26, Ohio Turnpike Commission, Columbus, O.

550 tons, Umatilla county, Oregon, Columbia river bridge; bids to Judge J. J. Sturgis, Pendleton, Oreg., Aug. 25.

535 tons, Garden State Parkway, contract 58, section 3, Essex county, New Jersey; bids Sept. 3.

235 tons, Kennewick main canal, Columbia Basin project; bids in to Bureau of Reclamation, Denver.

125 tons, Washington state road projects, Skagit and Snohomish counties, Washington; bids in.

100 tons, Potholes East canal, Columbia Basin project; bids in to Bureau of Reclamation, Denver.

PLATES . . .

PLATES PLACED

3000 tons, oil storage API tanks, for General Petroleum refinery, Ferndale, Wash., to Consolidated Western Steel Corp., Seattle.

1200 tons, including shapes, 26 sets of intake stop logs, Chief Joseph dam, to Consolidated Western Steel Corp., Seattle.

650 tons, fuel storage tanks, C. H. Sprague & Son Co., Providence, R. I., to Chicago Bridge & Iron Co., Chicago.

115 tons, water tank, Myrtle, Oreg., to Chicago Bridge & Iron Co., Seattle.

100 tons, water tank, Culver, Oreg., to Chicago Bridge & Iron Co., Seattle.

PLATES PENDING

5000 tons or more, 19 self-propelled 210-foot steel barges, including six dry cargo; six liquid cargo, and seven refrigerated, diesel powered, Navy purchasing department, Sept. 2, various destinations.

2000 tons, 80,000 bbl oil fuel storage, Manchester, Wash., bids to 13th Naval District, Seattle, Aug. 20.

900 tons, 180,000-bbl tank farm, pumphouses, etc., Eielson air base, Alaska; general contract awarded Morrison-Knudsen Co., Seattle, low $4,525,823.

550 tons, gas and fuel storage, Elmendorf air base, Alaska; S. Birch & Sons and Lytle & Green, Seattle, joint low on two schedules, $7,230,373 and $546,373, respectively.

400 tons, three storage tanks, Mountain Home, Idaho, base; bids to U. S. Engineer, Walla Walla, Wash., Aug. 20.

300 tons, 310-ft, $1½ million, 10 auto ferry; bids to Washington Toll Bridge Authority, Olympia, Sept. 4.

PIPE . . .

CAST IRON PIPE PENDING

400 tons, city system expansion; bids opened by Cottage Grove, Oreg., Aug. 17.

RAILS, CARS . . .

LOCOMOTIVES PLACED

Canadian National, 50 diesel electric road switching locomotives, including: Eighteen 1600-hp units, to Montreal Locomotive Works, Montreal; twenty-four 1500-hp units to General Motors Diesel Ltd., London, Ont.; and eight 1200-hp units to Canadian Locomotive Co., Kingston, Ont.

Indiana Harbor Belt, seven 1200-hp switching locomotives, to Electro-Motive Division, General Motors Corp., La Grange, Ill.

White Pass & Yukon, two 80-ton 800-hp diesel electric switching engines, to General Electric Co., Schenectady, N. Y.

RAILROAD CARS PLACED

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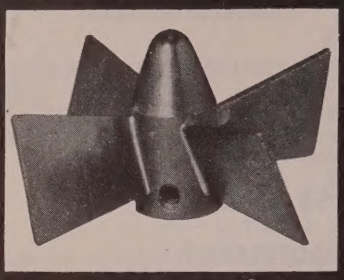

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Advertising Index

Abrasive Products, Inc. . . . 97
Allied Research Products, Inc. . . . 103
Allied Steel & Conveyors, Inc. . . . 59
Alter Co. . . . 139
American Bridge Division, United States Steel Corporation . . . 125
American Chemical Paint Co. . . . 77, 145
Armco Steel Corporation . . . 33
Associated Spring Corporation . . . 106
Atlas Car & Mfg. Co., The . . . 71

Babcock & Wilcox Co., The, Tubular Products Division . . . Inside Front Cover
Barber-Colman Co. . . . 133
Barnes-Gibson-Raymond, Division of Associated Spring Corporation . . . 106
Barnes, Wallace, Co., Division of Associated Spring Corporation . . . 106
Barnes, Wallace, Co., Ltd., The, Division of Associated Spring Corporation . . . 106
Basic Refractories, Inc. . . . 7
Beryllium Corporation, The . . . 130
Bethlehem Steel Co. . . . 1
B-G-R Cook Plant, Division of Associated Spring Corporation . . . 106
Bigelow-Liptak Corporation . . . 131
Big Joe Manufacturing Co. . . . 143
Bristol Brass Corporation, The . . . 132
Browning, Victor R., & Co., Inc. . . . 140
Buffalo Bolt Co., Division of Buffalo-Eclipse Corporation . . . 70
Bullard Co., The . . . 89
Burt Manufacturing Co., The . . . 136

Calumet & Hecla, Inc., Wolverine Tube Division . . . 104, 105
Camcar Screw & Mfg. Corporation . . . 102
Carpenter Steel Co., The, Alloy Tube Division 137
Cattie, Joseph P., & Brothers, Inc. . . . 142
Chemsteel Construction Co., Inc. . . . 145
Cincinnati Shaper Co., The . . . 19
Clearing Machine Corporation . . . 78
Cleveland Hotel . . . 145
Cleveland Steel Tool Co., The . . . 140
Cold Metal Products Co., The . . . 48
Colorado Fuel & Iron Corporation, The, Wickwire Spencer Steel Division . . . 65
Columbus McKinnon Chain Corporation . . . 108
Continental Tool Works Division of Ex-Cell-O Corporation . . . 4
Crucible Steel Company of America . . . 69

De Laval Steam Turbine Co. . . . 20
Delco Products Division of General Motors Corporation . . . 15
Detroit Stamping Co. . . . 142
Diamond Mfg. Co. . . . 140
Dunbar Brothers Co., Division of Associated Spring Corporation . . . 106

Eastern Machine Screw Corporation, The . . . 140
Electric Controller & Mfg. Co., The . . . 34
Ex-Cell-O Corporation . . . 5
Ex-Cell-O Corporation, Continental Tool Works Division . . . 4

Farval Corporation, The . . . Inside Back Cover
Foster, L. B., Co. . . . 149

General Cable Corporation . . . 22, 23
General Electric Co. . . . 24, 25
Gibson, William D., Co., The, Division of Associated Spring Corporation . . . 106
Gisholt Machine Co. . . . 21
Gregory Industries, Inc., Nelson Stud Welding Division . . . 10

Helical Tube Corporation . . . 145
Hobart Brothers Co. . . . 3
Hyatt Bearings Division, General Motors Corporation . . . 52

International Nickel Co., Inc., The . . . 30
Iron & Steel Products, Inc. . . . 149

Jones & Laughlin Steel Corporation . . . 99

Kaiser Engineers Division of Henry J. Kaiser Co. . . . 6
Kewanee-Ross Corporation . . . 73

Lamson & Sessions Co., The . . . 13
Landis Machine Co., The . . . 14
Lindberg Engineering Co. . . . 66
Link-Belt Co. . . . 142
Loftus Engineering Corporation . . . 90
Logemann Brothers Co. . . . 147
Luria Brothers & Co., Inc. . . . 114

Mackintosh-Hemphill Co. . . . 28, 29
Mahon, R. C., Co., The . . . 27
Manross, F. N., & Sons Co., Division of Associated Spring Corporation . . . 106
Milford Rivet & Machine Co., The . . . 94
Milwaukee Division of Associated Spring Corporation . . . 106
Morgan Construction Co. . . . 47
Morgan Engineering Co., The . . . 85
Mundt, Charles, & Sons . . . 148

National Steel Corporation . . . 26
Nelson Stud Welding Division of Gregory Industries, Inc. . . . 10
New Departure, Division of General Motors 55
Newport Steel Corporation . . . 119
Niagara Blower Co. . . . 12
Nox-Rust Chemical Corporation . . . 109

Oakite Products, Inc. . . . 128
Ohio Division of Associated Spring Corporation . . . 106
Ohio Locomotive Crane Co., The . . . 142
Ohio Steel Foundry Co., The . . . 60

Phillips Petroleum Co. . . . 2
Pittsburgh Crushed Steel Co. . . . 145
Poe Machine & Engineering Co., Inc. . . . 140
Pusey & Jones Corporation, The . . . 141

Raymond Manufacturing Co., Division of Associated Spring Corporation . . . 106
Republic Steel Corporation . . . 129
Roebling's, John A., Sons Corporation . . . 17

Seaboard Coil Spring Division of Associated Spring Corporation . . . 106
Signode Steel Strapping Co. . . . 112
Stamco, Inc. . . . 38
Standard Conveyor Co. . . . 76
Standard Pressed Steel Co. . . . 8, 9
Steel Shot & Grit Co. . . . 145
Superior Tube Co. . . . 63

Timken Roller Bearing Co., The, Steel & Tube Division . . . 56
Topper Equipment Co. . . . 142

Udylite Corporation, The . . . 18
United States Steel Corp., Subsidiaries . . . 125
United States Steel Export Co. . . . 125
United Wire & Supply Corporation . . . 150

Valley Mould & Iron Corporation . . . 37
Victor Saw Works, Inc. . . . 16

Wean Engineering Co., Inc. . . . Back Cover
Weirton Steel Co. . . . 26
Westinghouse Electric Corporation . . . 75
Wickwire Spencer Steel Division of The Colorado Fuel & Iron Corporation . . . 65
Wise, Henry H., Co. . . . 140
Wolverine Tube Division of Calumet & Hecla, Inc. . . . 104, 105

Youngstown Sheet & Tube Co., The . . . 11

Table of Contents, Page 5

Classified Advertising, Pages 148, 149

Farval saves 50 minutes of each lubricating hour on Clearing press

FARVAL—*Studies in Centralized Lubrication* No. 150

GOOD news for cost-conscious management! Lubrication studies show that Farval saves 50 minutes out of every hour of oiling labor.

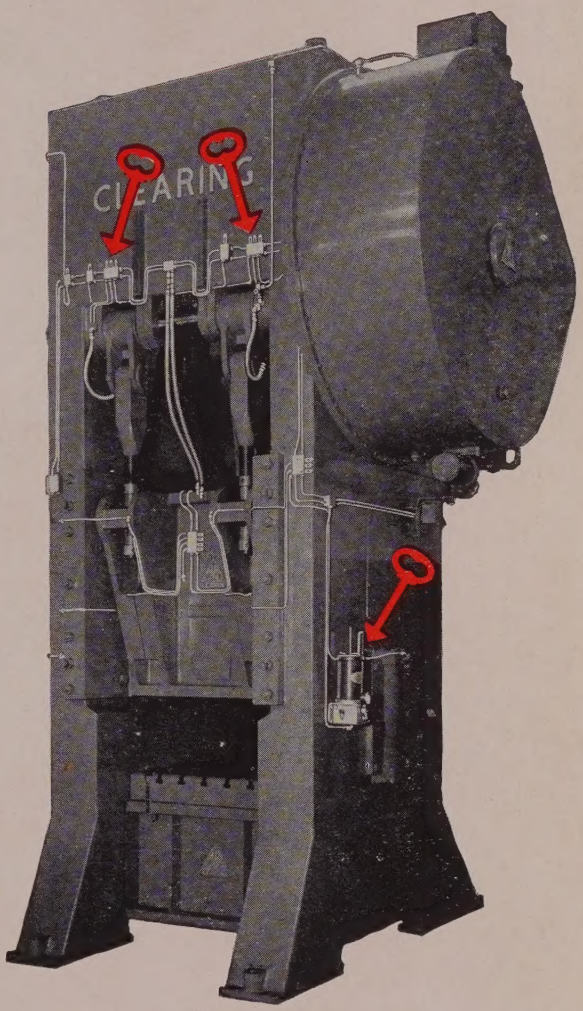
In a lubrication study of this Clearing press, hand-oilers were clocked with a grease gun as they lubricated, cleaned nipples, refilled gun, climbed and traveled from point to point. Averages show that it takes .747 minutes of labor per point to do all this. Thus, to grease this 41-point press by hand once per shift would take a little over 30 minutes. That's one hour a day based on a two-shift day.

Now, look at Farval. Experience shows that it takes only .188 minutes of labor per point to build up and hold pressure and lubricate. On the same basis, Farval lubrication takes a little over 10 minutes per two-shift day. This includes time for filling the Farval reservoir once every 5 days. In other words, Farval saves 50 minutes out of every hour of oiling labor! With larger Farval systems and with more points per press, the time savings are even greater.

Farval is the original Dualine system of centralized lubrication that delivers oil or grease under pressure to a group of bearings from one central station, in exact quantities, as often as desired. The Farval valve has only two moving parts—is simple, sure and foolproof, without springs, ball-checks or pinhole ports to cause trouble. Indicators at every bearing show that each valve has functioned.

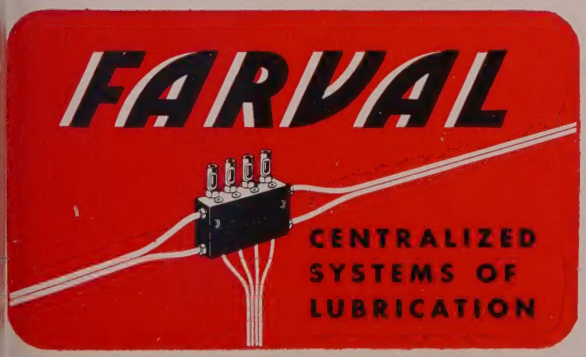
Get full information on the Farval system of centralized lubrication by writing today for new Bulletin 26. The savings possible in your own plant will surprise you! The Farval Corporation, 3270 East 80th Street, Cleveland 4, Ohio.

Affiliate of The Cleveland Worm & Gear Company, Industrial Worm Gearing. In Canada: Peacock Brothers Limited.



KEYS TO ADEQUATE LUBRICATION—Wherever you see the sign of Farval—the familiar valve manifolds, dual lubricant lines and central pumping station—you know a machine is being properly lubricated. Farval manually operated and automatic systems protect millions of industrial bearings.

The 310-ton Clearing press shown above is installed in a well-known automobile plant in Michigan. You can see the major part of the Farval manual system—valve manifolds, lubricant lines and manual pumping unit. Within seconds and without moving from the central pumping station, one man can lubricate all 41 points.



The WEAN

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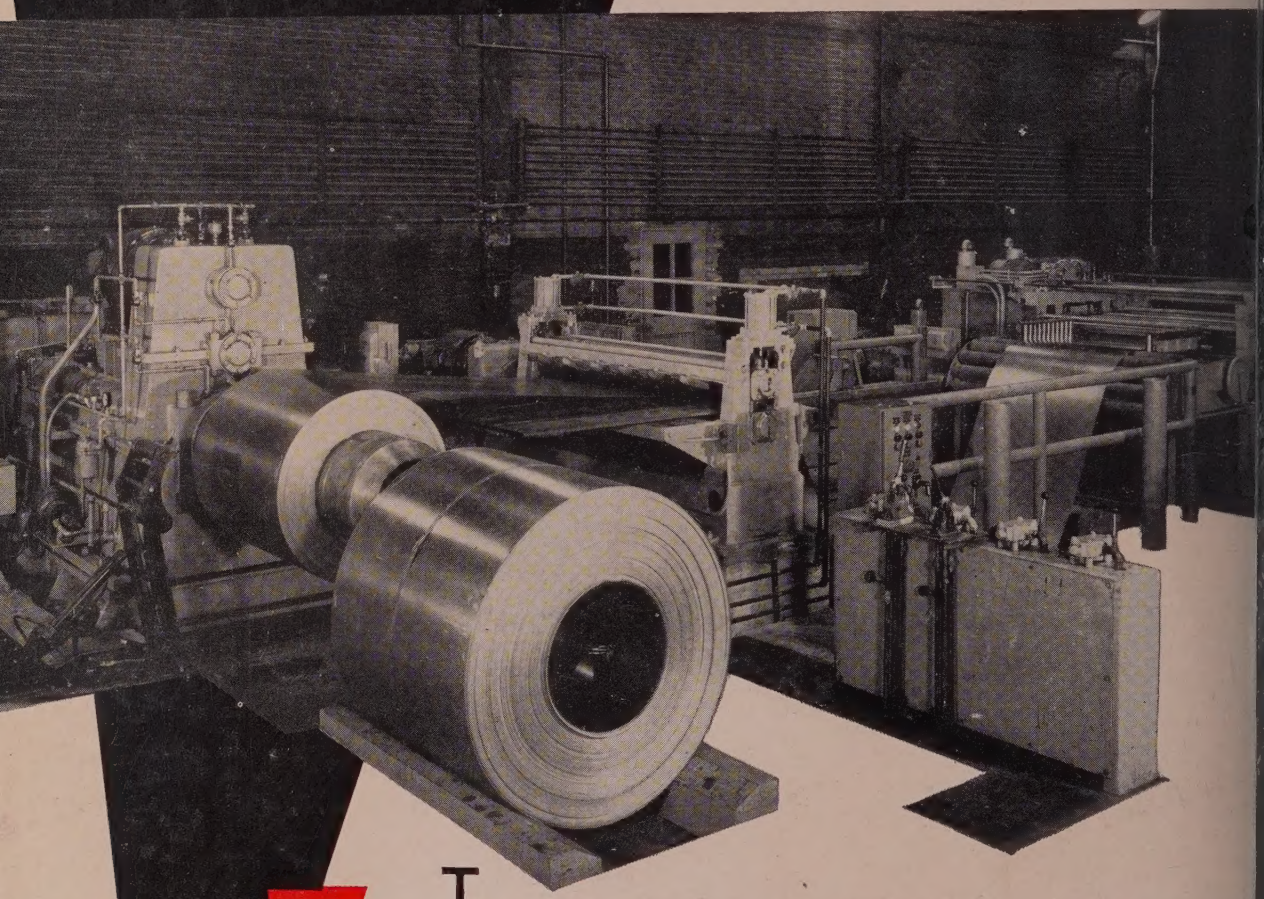
Warren, Ohio . .



THE Wean Engineering Company, Inc., Warren, Ohio, is a recognized specialist in the design and installation of sheet, tin and strip mill equipment. The expert knowledge and trained imagination of one of the world's most noted steel mill engineering firms is at your service when you specify Wean — whether the job calls for a single piece of equipment or a complete design of an entire line.

SPECIALISTS IN SHEET, TIN & STRIP MILL EQUIPMENT